Antiquity

A Quarterly Review of Archæology

Edited by O. G. S. Crawford, F.S.A.

JUNE 1933

	Page
Editorial Notes	129
The Ancient Italian Town-House. By R. C. Carrington	133
The Azanian Civilization of Kenya. By G. W. B. Huntingford	153
The Age of the British Flint Mines. By Grahame Clark and Stuart Piggott	166
The Guilloche. By Allen W. Seaby	184
Dolmens of North Caucasia. By A. M. Tallgren	190
The Abbots Bromley Horn Dance. By Violet Alford	203
Currency Bars and Water-Clocks : a reply by Reginald A. Smith, and rejoinder by E. Wyndham Hulme	210
Notes and News :—	
The New Battle of Gergovia, 216 ; Palace of Darius at Persepolis, 219 ; Caves of South Africa, 220 ; Palstaves from Dewlish, Dorset, 221 ; Goward Hill Cairn, 222 ; Bertram, Stukeley and Thomas Wright, 222 ; Vivianite, 226	
Some Recent Articles	229
Reviews (*for list see next page*)	232

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REVIEWS

Page

The Personality of Britain. *By* Cyril Fox – – – – – – – – 232

Byzantine Civilization. *By* Steven Runciman – – – – – – – 234

Inventory of Objects of Roman and Provincial Origin in Scotland. *By* James Curle – 235

Roman Forts of Old Kilpatrick and Croy Hill. *By* Sir George Macdonald – – – 237

The Great Wall of Hadrian in Roman Times. *By* Paul Brown – – – – – 239

Early Age of Greece. *By* William Ridgeway – – – – – – – – 239

Paléopathologie et Pathologie comparative. *By* Léon Pales – – – – – 241

The Mesolithic Age in Britain. *By* J. G. D. Clark – – – – – – – 242

Earlier Historical Records of Rameses III – – – – – – – – 243

The Edwin Smith Surgical Papyrus. *By* J. H. Breasted – – – – – – 244

Early Muslim Architecture. *By* K. A. C. Creswell – – – – – – – 246

Up from the Ape. *By* Ernest A. Hooton – – – – – – – – 248

Ancient Oil Mills and Presses. *By* A. G. Drachmann – – – – – – 249

Les Religions orientales dans le Paganisme romaine. *By* Franz Cumont – – – 250

Wandmalereien der Athos-Klöster. *By* Fritz Fichtner – – – – – – 252

L'Art Byzantin. *By* H. Peirce *and* R. Tyler – – – – – – – 253

The Animal Style in Russia and China. *By* M. Rostovtzeff – – – – – 254

Corinth, vol. 8, *Latin Inscriptions*; vol. 10, *The Odeum* – – – – – – 255

Jainism in Northern India. *By* Chimanlal J. Shah – – – – – – – 256

EDITORIAL NOTICES

ANTIQUITY is published quarterly on the 1st of March, June, September, and December.

THE ANNUAL SUBSCRIPTION (including postage) is ONE POUND (United States, 5 DOLLARS). It is payable in advance to the ASSISTANT EDITOR, 24 Parkend Road, Gloucester, England.

SINGLE COPIES may be obtained through any bookseller for 5s. 6d., which includes postage. Trade orders should be addressed to the printer, John Bellows, Gloucester, England.

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NEW SERIES] APRIL, 1933. 2s. net. [VOL. XVIII, No. 69

HISTORY

THE QUARTERLY JOURNAL OF

THE HISTORICAL ASSOCIATION

Editor: MISS E. JEFFRIES DAVIS, M.A., F.S.A.

Assistant Editor: C. H. WILLIAMS, M.A.

CONTENTS:

ARTICLES:

The Teaching of Local History. By THE BISHOP OF PLYMOUTH (The Right Rev. J. H. B. Masterman, D.D.)

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By J. E. B. GOVER, A. MAWER, and F. M. STENTON

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Antiquity

A Quarterly Review of Archaeology

VOL. VII NO. 26 JUNE 1933

Notes

For reasons of convenience our usual comments on Recent Events are substituted for the customary Editorial Notes.

With reference to a note on the ' pebble giants ' of California in our December number (ANTIQUITY, 1932, VI, 479), Mr ARTHUR WOODWARD, of the Los Angeles Museum, writes to us under a misapprehension. Since other readers may have misunderstood what we said it will be better to make this quite clear by a restatement. We had no intention of implying, as Mr Woodward thought, that the *ground-figures* were of natural origin ; they are obviously the work of man. We merely suggested that other (natural) features visible on the air-photograph seemed to point to the fact that the artificial ground-figures were of no great age. But we do not in the least desire to press a view based merely upon a photograph if it is not acceptable to those familiar with the actual topography.

Mr WOODWARD says :—' As to their age, I do not know at the present time. Judging by the " desert varnish " or patina upon the smooth, water-worn, wind-whipped and sun-darkened pebbles constituting the peripheral ridges outlining the figures, I should judge that these figures had been there for many years '.

In *The Times* of 28 January, Mr Arthur Upham Pope writes about recent discoveries in Persia and the adjoining regions. It is here, and especially in the region to the north of Persia, that the most important discoveries of the future will be made. We are particularly interested in one paragraph which we quote in full :—

' M. Alexander Marustchenko, a brilliant young Russian archaeologist, has been for several years excavating at Askabad, directly over the border of northeast Persia. Here were found nearly 100 prehistoric mounds, some clearly dating from at least the beginning of the 4th millennium B.C., and producing pottery of the Susa I type '.

Should this number of ANTIQUITY meet the eye of M. Marustchenko and his colleagues, we hope that he will communicate with the Editor, as we should like to publish some report of his results in a future number of ANTIQUITY, for the benefit of archaeologists outside the Soviet Union. (Incidentally we suggest that *The Times* map-draughtsman might learn a little political geography. On the map accompanying Mr Pope's article, both Armenia and Turkestan are marked ' Soviet Russia '. Armenia is no more Russia than Scotland is England).

A car patrol of the Egyptian Army discovered, in the Nubian desert about 40 miles northwest of Abu Simbel, two hieroglyphic inscriptions with the names of kings of the 4th and 12th dynasties. A later visit by Mr Englebach resulted in the discovery of quarries from which the ancient Egyptians obtained the stone used for their statues.

' Every variety of diorite was found, from the black-green stone of which the royal statues of the old kingdom were made, to the black speckled with white frequently used for bowls and vases. Half-dressed blocks are lying about, evidently abandoned owing to the discovery of flaws, and a ramp has been identified up which blocks were evidently rolled for loading on sleds. The whole site is more than a mile square. Eight miles further north other cairns have been discovered with inscribed stelae recording expeditions sent out to obtain some precious material, possibly amethyst, from the desert ' (*The Times*, 28 February, p. 13). We hope that vertical air-photographs will be taken of these sites.

A jar containing 40 lb. in weight of gold and silver Turkish coins, mostly gold, and therefore representing a very considerable sum of

money, has been discovered buried in a field near Skoplje. It is believed that it was buried by a Turkish landowner during the first Balkan War. (*The Star*, London, 21 March).

We quote this find, not because it is, presumably, of any direct archaeological interest, but because it is an admirable modern parallel to the hoards of gold objects, Roman and medieval coins and jewelry which are unearthed from time to time in this country. Such hoards are used by historians as evidence of disturbed conditions. They are most numerous at periods when the raids of Picts and Scots took place and, later, during our own Civil War. The Turkish instance provides a close parallel in our own day.

There has been quite a spate of hoards recently—or is it that the more enlightened attitude of most modern States results in completer preservation? This, perhaps combined with the effects of greater publicity for archaeology, generally prevents such finds from going into the local jeweller's melting pot, the fate of the famous Battle hoard and many others.

Thus the discoverers of gold bracelets at Towednack (ANTIQUITY 1931, VI, 96) and of gold British coins at Chute and Westerham (*ib.* 1928, II, 90, 228–9,) all received their full reward from the State. So too did the agricultural labourer who found a magnificent collection of late medieval ornaments and coins at Kropp, in the province of Skaane, Southern Sweden. (*The Times*, 23 March, p. 13).

A correspondent writes :—'In ANTIQUITY for March, p. 99, Capt. T. W. M. Johnson refers to willow-herb growing on slag heaps, and the following information may therefore be of interest.

'Cannock Chase lies about 4 miles southeast of Stafford and during the war period, 1914–18, the greater part was covered with military camps. In consequence many natural features were altered—for instance, roads were made where tracks had previously existed, high ground was cut down and hollows filled up, filter beds were made for the drainage system and in general great quantities of slag were used for these purposes. Since the camps have vanished I have noticed during the summer time great masses of willow-herb in bloom on the

sites where slag has been dumped. Each year the growth gets more dense but does not seem to spread to those parts of the Chase which were not subject to human occupation. Before the war willow-herb was unknown on the Chase'.

Mr W. F. JACKSON-KNIGHT writes :—' Mr G. D. Hornblower offers (ANTIQUITY, March 1933, p. 94f) the attractive proposal that the name of Homeric Troy, which I had connected (*ibid.* 1932, VI, 454, etc.) with the root TRO apparent in maze names, and the name of Tros, the foundation hero, also, may have referred originally, if in fact they contain connotations of " shutting ", to the closing of trade routes, commanded where they crossed by the fortress also called Ilion. I add that the name Ilion is capable of a similar interpretation, by comparison with the verb εἴλω, for which Liddell and Scott give " *to roll up* or *pack* together *into close quarters* . . ., κατὰ τείχεα λαὸν ἐέλσαι, *to roll up* the host *and force it back to* the walls, Il. 21.295 . . . in pass. also, *to go to and fro, . . . to wind, turn round. . . .*". All the most relevant meanings therefore seem available in this word ; and, since its root ΕΛ or ΑΛ is identified in ἵλιγξ, ἵλιγγος, ἱλιγγιάω, the etymological connexion with Ilion should not be impossible '.

There is no end to the possibilities opened up by such speculations. At least there would be no end if there were not also a blue pencil. Before using it however we are going to join in ourselves in the Trojan game, after which the present tournament must close. The last instance comes from Portugal and is quoted from FOLKLORE, December 1932, XLIII, 454 :—' Just east of Cabo de Espichel a Roman, pre-Roman and supposed Phoenician settlement, built on sand-dunes [*sic*] forming the outer shelter of the Setubal bay [in Portugal], has partly sunk into the sea. The place is called Troia, and on the highest point of the present dunes stands what may be a phallic column, ten feet high, plainly visible from the opposite shore'.

The Ancient Italian Town-House

by R. C. Carrington

UNTIL a decade or two ago, our knowledge of town-houses in ancient Italy had been obtained almost entirely by digging at Pompeii, and the dwellings uncovered in that town were regarded without question as typical of ancient Roman houses in general. The houses which thus came to be accepted as the pattern, and are still represented as such in English text-books, consisted down to the 2nd century B.C. of rooms arranged round a central atrium, and later, when Hellenistic influences had become paramount in Italy, of a combination of atrium and peristyle, the latter being added in imitation of the ἀυλή of a Greek house. Of late years, however, the view that these houses were typical of all Italian towns in antiquity has been challenged. The systematic excavation which is going on at Ostia, the ancient port of Rome, has revealed houses very different from those of Pompeii, comprising, not an atrium and peristyle, but many-storeyed blocks of flats, built around a central cortile, in the manner of the casamenti of modern Rome. As a result of these discoveries the pendulum tended to swing to the other extreme and the view gained ground that, if we wish to find a house representative of large cities in antiquity, it is to Ostia rather than to Pompeii that we must look.[1] Confirmation of this view was seen in the discovery of a house of the Ostian type, dating from the 2nd century A.D., on the slope of the Capitol in Rome.

The finds at Ostia, however, had their reaction on the course of investigation at Pompeii, and it was pointed out that in the years immediately preceding the eruption of Vesuvius which destroyed the town (A.D. 79), certain innovations were made in Pompeian domestic architecture which offer close analogies to the most typical features of the Ostian house.[2]

Such is the position which the course of investigation has reached at the present time. The purpose of this paper is to examine in

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[1] Rostovtzeff, *Social and Economic History of Rome*, p. 507.

[2] A. Maiuri, 'Contributi allo Studio dell' Ultima Fase Edilizia Pompeiana', in *Atti del Primo Congresso Nazionale di Studi Romani*, 1929, pp. 161ff.

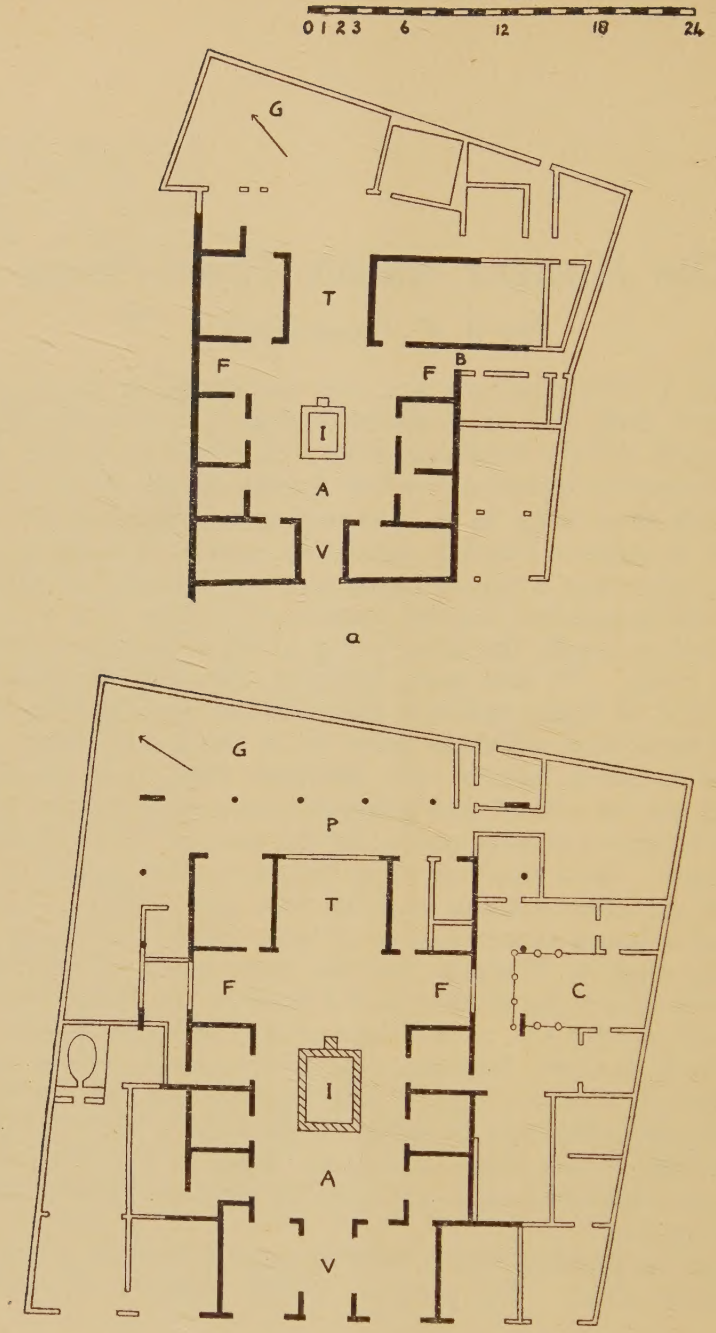
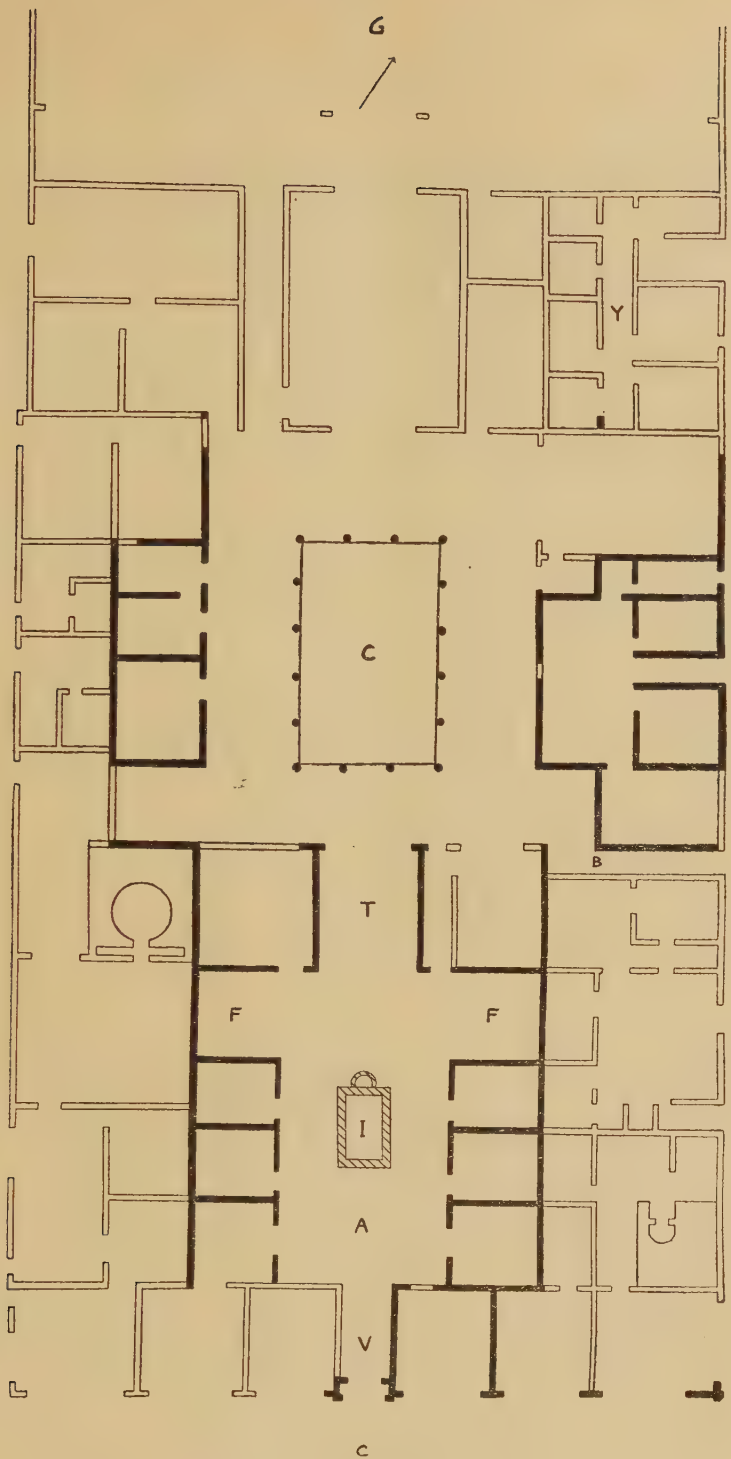


FIG. 1. PLANS OF POMPEIAN HOUSES:
a, 'House of the Surgeon' (4th cent. B.C.). b, 'House of Sallust' (3rd cent. B.C.).
c, 'House of Pansa' (2nd cent. B.C.).
Black or hatched portions indicate the plan of the original house so far as they can be inferred from present remains



A, Atrium. B, Postern. C, Peristyle. F, Ala. G, Garden. I, Impluvium. T, Tablinum. V, Vestibule. Y, Corridor

chronological series some of the most important types of house uncovered at Pompeii and Ostia, and to show that the variety of form which they present can be explained without difficulty simply by reviewing them in the order in which they were erected, and that, once they are assigned to their respective periods, they make it possible to trace a logical development through the domestic architecture of the two towns. It is hoped, moreover, that by treating of the houses in chronological order this paper will provide a short history of the town-house in ancient Italy from the 4th century B.C., when the earliest excavated house was erected at Pompeii, to the 2nd century A.D., which saw the zenith of Ostia's prosperity.

It must not be assumed that the plan of the house selected as representative of each period is reproduced in all its details by every house erected in the same epoch. Exigencies of the site as well as the means of the owner caused all manner of modifications. What is true, however, is that each house is typical in a general way of all the houses erected in the same age and is representative of the most up-to-date domestic architecture of the day. It will be long before a history of Italian town houses can be written with any fulness of detail, for at present the archaeological material is lacking and its excavation is necessarily slow. In view, however, of the systematic digging which is going on at Pompeii, Herculaneum, and Ostia, and the finds of importance which are occasionally made in the capital itself, it is only a question of time before sufficient evidence is forthcoming. When it does appear, it will require, not an article, but a volume to set out its historical import.

The excavations which were carried out in 1930 and 1931 under the floor-level of the so-called 'House of the Surgeon' at Pompeii (fig. 1, a; plates I and II), show that the earliest Pompeian houses, of which this is the best-preserved example, date from the 4th century B.C.[3] The house consisted in its original form of rooms arranged round a central area, or atrium (A). All the rooms are rectangular in shape except those flanking the main entrance (V), and of these one side departs from the rectangular only to conform to the line of the street. Two of these rooms were entirely open on the side facing the central area and were known in antiquity as alae (F); the others were real rooms entered through openings about four feet in width (plate II). Besides the main entrance the house had a posticum or postern (B) leading through one

[3] *Notizie degli Scavi*, 1930, pp. 381ff.

of the alae to the southeast, but whether it led into a garden or into a lane is uncertain, as this subsidiary door was later closed and the area into which it led was built over. Opposite the main entrance was the tablinum (T), and beyond this must have lain a garden (G), but the exact dimensions of the garden are not known as the present enclosing wall is a later reconstruction. Beyond two very narrow windows in the façade of the house,[4] the sources from which light reached the bedrooms and alae were the window in the tablinum and possibly the roof.

It is not known how the atrium was roofed originally. One of the most interesting results of the excavation has been to show that the present impluvium (I, and plate II) is not older than the 2nd century B.C., and that previously the floor had no impluvium at all, but consisted simply of beaten earth. When an atrium possesses an impluvium, it is clear that the whole area was covered except for the small space in the middle of the roof (compluvium), which corresponded to the impluvium in the floor. But when the latter feature is lacking, we have nothing from which to infer the form of the roof. Such is the case with the 'House of the Surgeon' in the form which it had down to the 2nd century B.C. It is possible that deep excavation under other houses of the same period will furnish evidence to suggest the form of their roofs. Until such excavation is undertaken, all argument will be hypothetical and all conclusions unreliable. All that is known at present is that during and after the 2nd century B.C. the atrium fell under Vitruvius' description of an atrium Tuscum,[5] since the beams of the roof stretched from one wall to the other without the support of intermediate pillars.

The next stage in the development of the Pompeian house comes at the end of the 3rd century B.C., or, at latest, the very beginning of the 2nd, and is represented by the so-called 'House of Sallust'.[6] The area of the house is larger and the plan is more symmetrical than that just considered, but the main features of the 4th-century dwelling are still to be seen (fig. 1, b). The atrium (A) with its surrounding rooms continues to be the centre of the house, though the rooms flanking the

[4] One of these is visible to the right of plate I. The left half of the façade was broken through during the 1st century A.D. to make way for a shop. Before this was done, we may assume that it resembled the right half.

[5] VI, 3, 1.

[6] A. Maiuri, *La Villa dei Misteri*, pp. 50ff.

vestibule (V) have been opened on the side facing the street and converted into shops. It appears that the well-to-do Pompeian citizen was finding in retail trade a useful means of filling up the time of slaves and providing occupation for freedmen, who first began to come into notice at this time.

A glance at fig. 2, however, will show that in the course of the century which had elapsed since the erection of the ' House of the Surgeon ', certain modifications had taken place. The house now possesses an impluvium (I), which, as far as is discernible, is coeval with the rest of the building, and, more important still, in the rear portion of the house which has been preserved almost in its entirety, a portico (P and plate III), is found running round the outside wall and facing on to a garden (G). On the south side the portico can no longer be traced and the space is at present occupied by a peristyle (C) of much later date, but the window of the southern ala, which was walled up when the peristyle was built, seems to demand a continuation of the portico on this side.

We have here, then, a more elegant house than the ' House of the Surgeon ', the product of a more prosperous age. The atrium itself is larger, and properly drained, but more important than this is the evidence, provided by the portico, of a desire for more space and light than the confines of a badly-lit atrium could provide. In our ignorance of how the 4th-century house was covered, it is impossible to say how much light the rooms round the atrium derived from the roof. Clearly, however, when, at the end of the 3rd century, the roof-space through which light could penetrate was limited to the area of the compluvium, the rooms must have been dull and sunless. Thus it is not surprising that, as luxury increased, it brought a protest against the dominance of the atrium and a demand for airy porticos.

The improvement that resulted appears to have been a spontaneous Italic growth, owing nothing to foreign influence, for the columns of the portico are built of roughly hewn limestone blocks and the capitals show no sign of the Greek designs which were to become ubiquitous in Pompeii during the full flowering of the Hellenistic age.

We shall see that this movement away from the confines of the atrium, this desire to increase the importance of the outside walls of the house, though side-tracked during the 2nd century B.C. under the influence of the Greek peristyle, asserted itself once more during the 1st century of our era when shortage of land led to the development of certain new features in the house which rendered the problem of lighting acute.

At the beginning of the 2nd century B.C., Pompeii entered the full tide of Hellenistic civilization. During the course of the next fifty years, the houses of the wealthy assumed palatial proportions and still form one of the chief attractions for the visitor to the town.[7] The grey tufa, which is the characteristic building material of this age, responds readily to the chisel and was extensively used for capitals, columns, and pilasters. Beyond greater size and more elegant detail, the chief innovations in the plan of the house were two in number. In the first place, the atrium became more elaborate and in addition to the simple Tuscan type were developed the more elaborate atria-tetrastylia, Corinthia, etc., of Vitruvius' classification. Columns, usually four in number but at times as many as eight, were placed round the edge of the impluvium to support the roof, being a sheer necessity in those houses where the span of the atrium was too large for a single beam, but in smaller areas serving purely as ornament. These columns were not universal in houses of this century, but on the whole are a characteristic feature of the age.

A second innovation consisted of an enclosed garden surrounded by a portico (peristyle), which was added to the atrium under direct inspiration from the ἀυλή of a Greek house (fig. 1 c, c). The craving for light and space, which the atrium had failed to satisfy and which, at the end of the 3rd century, was diverting attention from the inside of the house to its external walls, was now satisfied on conservative lines ; for the peristyle became a second area in the house round which rooms could group themselves, as earlier they had been grouped round the atrium. This second area was, however, more open and better lighted than the first, being a garden surrounded by a portico, whereas the atrium had come to be, in fact, a closed area with a hole in the roof. The importation of the peristyle put an end for a time to the tendency, whose beginnings were manifest in the external portico of the 3rd century, to make the house face outwards rather than inwards.

The combination of atrium and peristyle had a long popularity. Even in the middle of the 1st century A.D., when new fashions had come into vogue, such houses were still being erected. A typical example is the well-known ' House of the Vettii ' at Pompeii, which is throughout an erection of the last thirty years before the eruption. In an age of freedmen, like the early days of the Roman Empire, when

[7] One of the most striking of these is the ' House of Pansa ' (fig. 1, c), which at present occupies a whole insula or house block. Although it was not as large as this when first erected, yet the surviving portions of the original walls show that it was of imposing size.

success in trade and industry raised many humble workmen from obscurity to prominence in their native town, such houses came to be regarded as the hall-mark of an established position. The innovations which will be traced in the next section were due indirectly to the spread of industrialization. The aristocracy of Italy, firmly rooted in the land, eyed them askance and the would-be aristocrat followed suit. Hence the atrium and peristyle continued to be built merely because they were old-fashioned and respectable. Up-to-date opinion, however, from the Augustan age onwards, began to seek something more consonant with the changing economic conditions.

Of the three types of house which have been described, only the third contained more than a single storey. During the 2nd century B.C., upper floors were not uncommon in Pompeii and they need to be considered before we pass to the next stage in the chronological series. The possibility of erecting an upper floor clearly depends on the strength of the walls which will have to carry it. Houses of the types described contain two kinds of construction. The façades were, as a rule, built of ashlar masonry (plate I), whose external appearance gives an impression of great solidity, but which, in fact, tends to become insecure when it attains any height, owing to the small thickness of the blocks (about 10 inches) in proportion to their depth (about 2 feet). The inner walls were made of rubble, quoined at angles and door-posts and reinforced at other vital points by pillar-like blocks of limestone or tufa, laid alternately in a horizontal and vertical position (plate II). Thus the horizontal blocks served to bind the door-post to the wall. Such reinforcement, though adequate for a one-storeyed house, was as a rule not strong enough for more, since the pillar-like blocks tended under pressure to become detached from the rubble wall and so to collapse.

In the ' House of the Surgeon ' the aggregate of the rubble is broken limestone and pumice, and the binding-material is clay. This clay, which has by now been reduced to a fine powder, contains small white particles, suggesting that possibly a little lime was mixed with it. The quantity of lime was, however, very small and, thus, we cannot dignify the clay with the name of mortar. Walls built of such rubble were evidently felt to be insecure, since in the ' House of the Surgeon ', to increase their solidity, they were built on a framework of long limestone blocks, laid, as just described, alternately in a horizontal and vertical position. It is not unnatural, therefore, that no attempt was made to erect a second storey on walls of such doubtful consistency.

By the end of the 3rd century, when the ' House of Sallust ' was erected, lime had come into general use, and the aggregate of the rubble was held together, not by clay, but by mortar. In consequence of this the walls of the house were firmer and capable of being carried to a greater height. Though they thus, even at this time, invited a second storey, it was not until the period of the ' House of Pansa ' that upper floors actually appeared. Remains of them are now difficult to find and consist of the holes left in the walls by the ends of the beams which carried the floor. It is recorded that when the house was excavated (1811) the carbonized remains of some of the beams were found still adhering to the rubble. A second storey seems to have existed over all the small rooms surrounding the atrium and some of those round the peristyle. It is significant, however, that no traces have survived of the staircases by which access was obtained to the upper floors, and from this we may infer that they were made of wood and were flimsy in structure. The height of the ground-floor rooms (about 16 feet) rules out the possibility of a high or important upper floor.

Thus, in general, we may say that houses of the first three types at Pompeii were mainly of a single storey, but that early in the 2nd century B.C. the possibility of upward development had begun to be envisaged, and the first tentative steps towards it were made in the course of the century. These steps did not, however, proceed far enough to affect in any way the ground-plan of the house.

A further point in reference to the plans contained in fig. 1 remains to be mentioned. If a one-storeyed house grows at all, it must do so by increasing the ground which it covers, and a comparison of the three plans makes it clear that from the 4th to the 2nd century B.C. a considerable increase had taken place. Horizontal expansion of this kind implies that building-land was plentiful, and, in fact, there are many indications that, down to the beginning of the 1st century B.C., it was not difficult at Pompeii to find either virgin sites or land covered by small buildings which could readily be demolished. From the 1st century B.C. onwards, however, it would seem that such sites were no longer available. The development of Pompeian industries and the growth of population which is the regular concomitant of industrialization was the chief cause which put building land at a premium. A contributary cause was the plantation of a colony of veteran soldiers in the town by P. Sulla, nephew of the Dictator, soon after 80 B.C.: this event must, temporarily at any rate and to some extent, have increased the demand for land. The house with atrium and peristyle

became more and more of a luxury, for it required a ground-area out of all proportion in size with the number of rooms that were built on it.[8]

At the same time building materials were changing. The ashlar façades and quoining of the early houses afforded, as we have seen, inadequate support for a heavy second floor owing to their tendency to sag or to become detached from the rubble wall. A new material, however, came into use during the 1st century B.C. and was employed with increasing frequency from the Augustan age onwards. This new material was brick-faced concrete. A core of concrete rubble was faced with flat triangular bricks or tiles, laid with the apex of the triangle penetrating the core and thus binding it firmly to the face (plates IV, VII). A wall or pilaster built in this way has the advantage over the ashlar masonry which was used in the earlier periods, that, though it be carried to the height of several storeys, it will stand quite firm, the rubble and the face forming a solid, unyielding mass.

No wall has been found in any Pompeian house which is faced throughout with triangular bricks. The new material seems to have been expensive, since, most probably, it had to be imported from some distance. But after the Augustan age it was used in doorposts, columns, and pilasters, at corners and other points of special stress, with increasing frequency.

Thus a scarcity of land coincided with the development of a material which made possible the construction of many-storeyed buildings, and the result was similar on a small scale to the result of just such a combination which has taken place in large towns of the modern world —a vertical tendency in architecture. Such is the nature of the last developments which are to be traced in the Pompeian house.

Even apart from the question of building materials, the problem of converting a single-storeyed atrium into a multiple storeyed house was not easy. It would have been simpler to jettison the old plan altogether and, as from one point of view is happening in architecture at the present day, to ask, not how new materials could be adapted to old designs, but what designs were called for by the new materials. But considerations of economy suggested the adaptation as far as was possible of existing buildings (*e.g.*, by replacing ashlar pilasters, and door-posts with brick-faced concrete), and it is the innovations and

[8] An indication of this is given by the plan of the house shown in fig. 2, a. The peristyle has here been abolished to make way for a bake-house, and the living rooms which would normally have surrounded it were placed over the atrium in a second storey.

experiments which thereby came to be made that afford the clue which we are seeking to the relationship between the Pompeian and the Ostian type of house.

The first need, when the rooms of the atrium had acquired a second storey, was to devise some means of intercommunication between those on the upper floor. This need was met by the use of balconies, situated either inside the atrium along each of its four walls, or along one of the external walls of the house, overhanging the pavement of the street. The commonest type of internal balcony is supported by four columns (plate V) or pilasters (plate IV), one at each corner of the impluvium, and covers the whole area which lies between the impluvium and the walls (fig. 2, a). If the balcony was required on one or two sides only, it was built without the supporting pillars. A staircase was situated in one corner of the atrium and was made either of wood (plate V) or of stone (fig. 2 a, S). In plate V an important consequence of this new architectural development is apparent. The atrium, as such, has ceased to exist. The space round the impluvium is merely a narrow corridor putting the ground-floor rooms in communication one with the other. The balcony, which runs over it, serves the same purpose upstairs, while the empty space between the compluvium in the roof and the impluvium in the floor has become merely a well of light to illuminate the surrounding rooms. Yet the problem of lighting the rooms round the atrium has been rendered acute, for in practice this well of light is not nearly adequate for its purpose.

The second type of balcony was intended to offer a way out of this difficulty (plate VI). External balconies were either roofed or open, but whatever their precise form, they served a double purpose. They not only, like the balconies inside the atrium, formed an upstairs corridor and means of communication, but also provided a method of compensating for the lack of light inside the house since they necessarily had to be lighted from outside. Hence their wide windows, looking, not inwards to the atrium, but outwards to the street.[9]

Thus there were two ways in which, at the time of the eruption, the domination of the atrium was being broken down : its area was being taken up by balconies and corridors, and its function as a means of lighting was passing to large windows situated in the external walls.

[9] Owing to the narrowness of the street, it was impossible to take a photograph which would give a true idea of the width of these windows. In plate VI they appear to be narrower than they actually are.

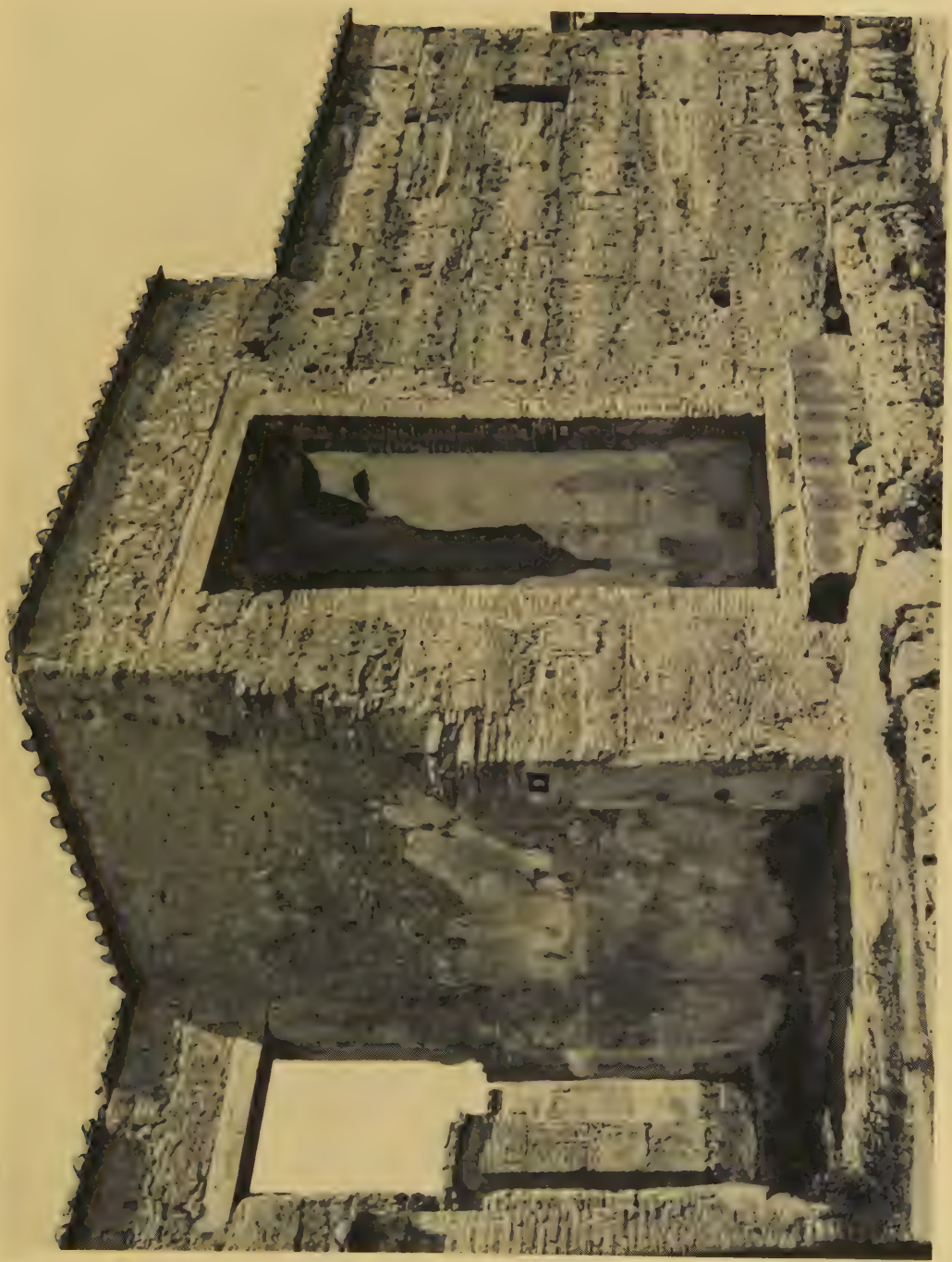
In this way, the movement away from the atrium, which began as early as the 3rd century B.C., and was temporarily retarded by the importation of the peristyle, began during the 1st century of our era to proceed towards its logical conclusion and resulted in changes of so revolutionary a nature that the continuity of development has generally been obscured.

A last innovation to be noticed at Pompeii is a consequence of the other two. When once the plan of external lighting had been adopted, it became possible to let any number of the rooms facing the street to extraneous people without thereby impinging on the privacy of the atrium. All that was required was either a separate entrance or, if the rooms were on the first floor, a separate staircase, from the street. Such an entrance is shown in plate VI, where, beside the main door on the right, there is a subsidiary opening on the left leading directly to a room which has no communication with the main body of the house.

No single building is found at Pompeii in which all the three developments which have been illustrated—internal and external balconies, and upper rooms approached directly from the street—occur simultaneously. The reason for this is, seemingly, that at the time of the eruption, the innovations were still in an experimental stage. Old houses were being adapted for new purposes and as far as possible the old walls were being kept. The architect had to be wary in making new additions. More than one old wall has been found that has sagged under the strain newly put upon it. Hence the full implications and possibilities of the innovations which we have described are nowhere seen at Pompeii. Vesuvius overwhelmed the town before they were realized, and to understand them fully and to see their final development we must look to Ostia, a town which was spared the fate of Pompeii and remained an important centre of trade until late in the 3rd century A.D.

Fig. 2, d, shows the ground-plan of the 'House of Diana' at Ostia, which is built throughout of brick-faced concrete and can be dated from the style of its brick-work to the latter part of the 2nd cent. A.D. Two storeys and part of the third have been restored in position (plate VII), and from the debris discovered in the vicinity it can be inferred that originally the house had five or six. It was not intended, like the Pompeian house, for the use of a single family, but was rather a block of flats, let off in portions to numerous families. The inner rooms of the several floors are grouped round a small cortile (fig. 2 d, 1), from which they draw practically all their light. They communicate by

PLATE I

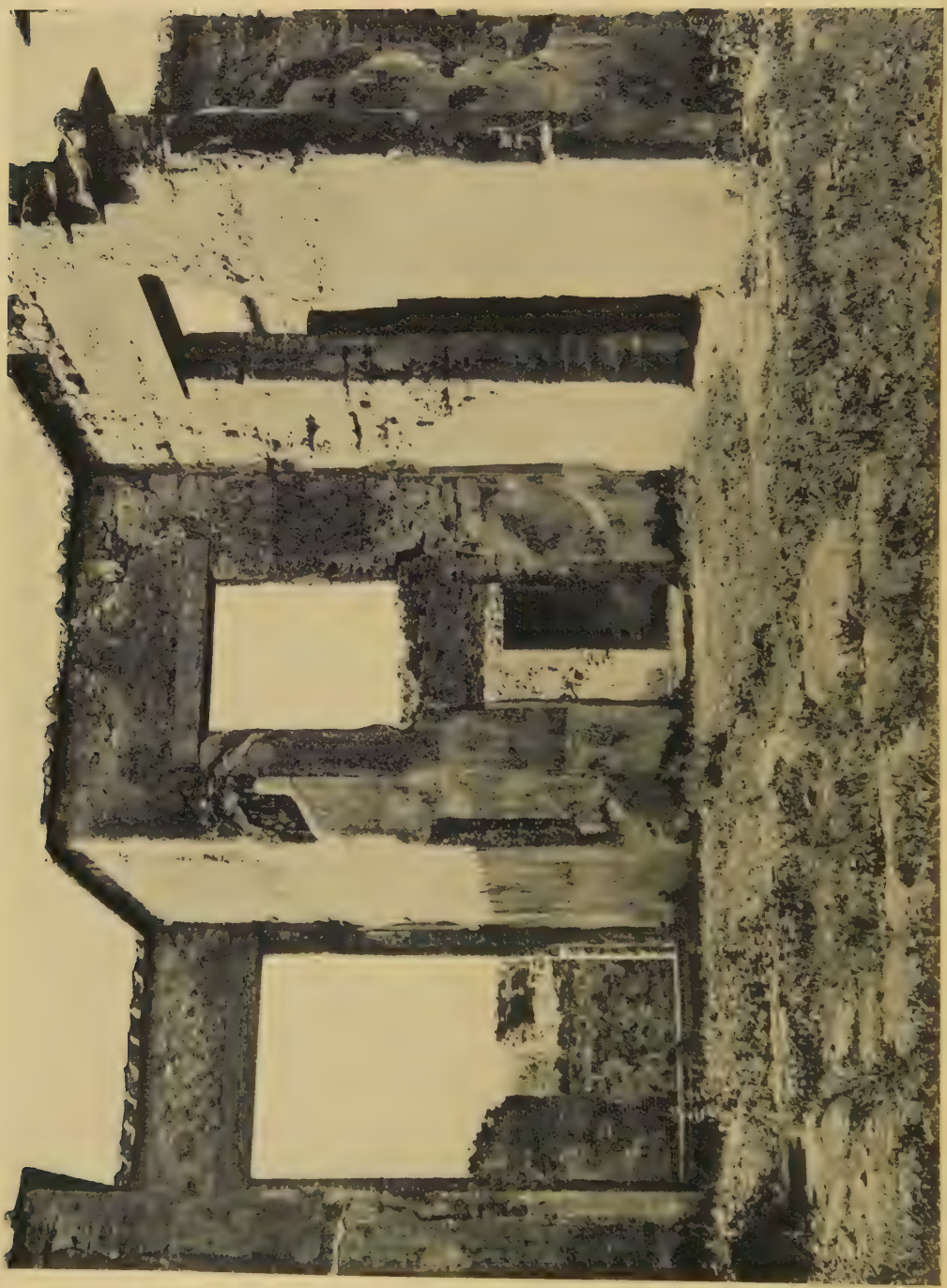


FAÇADE OF THE 'HOUSE OF THE SURGEON', POMPEII (4TH CENT. B.C.), FROM SOUTHWEST

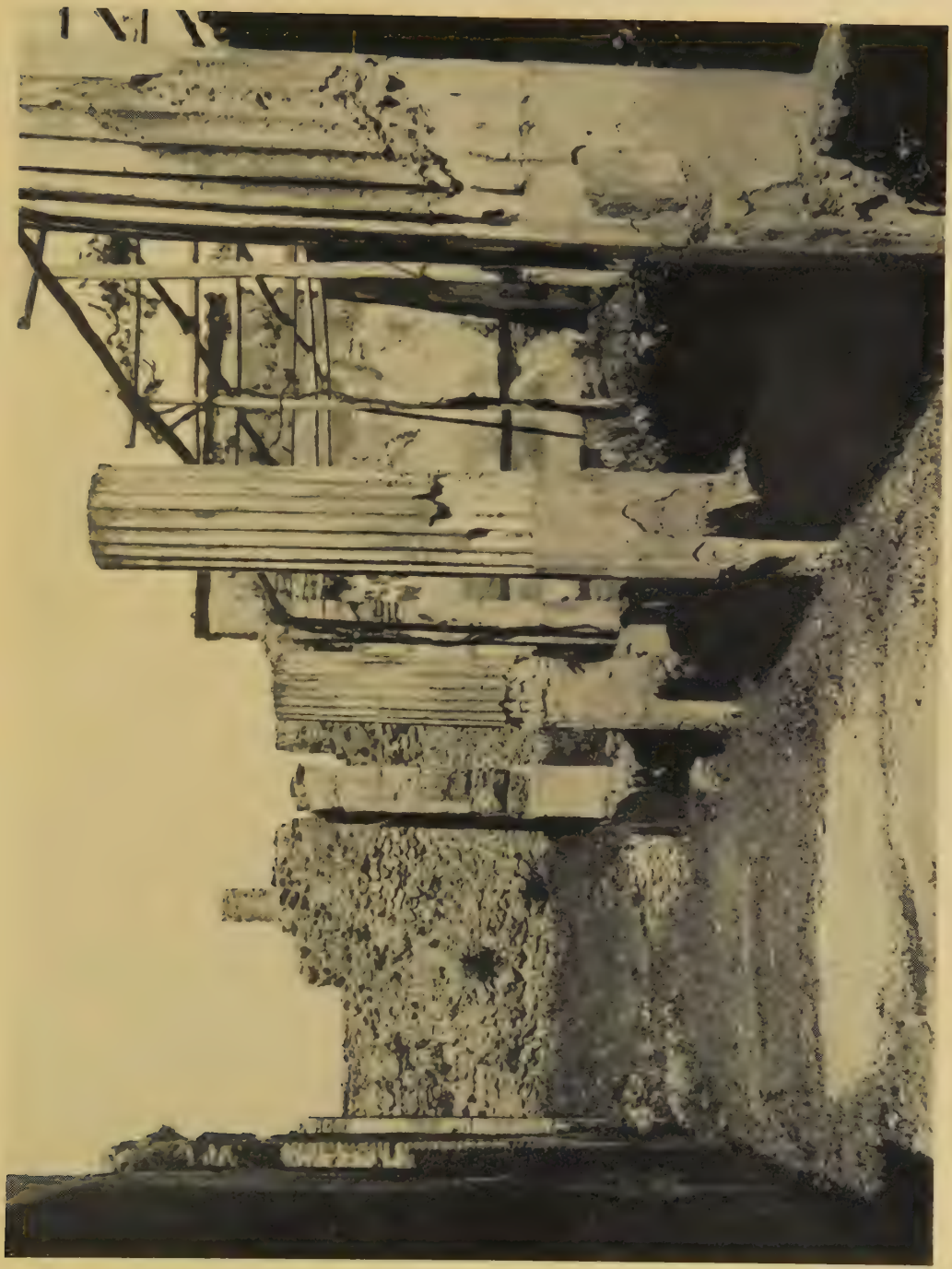
Plates I-VIII *ph* R. C. Carrington

facing p. 144

PLATE II

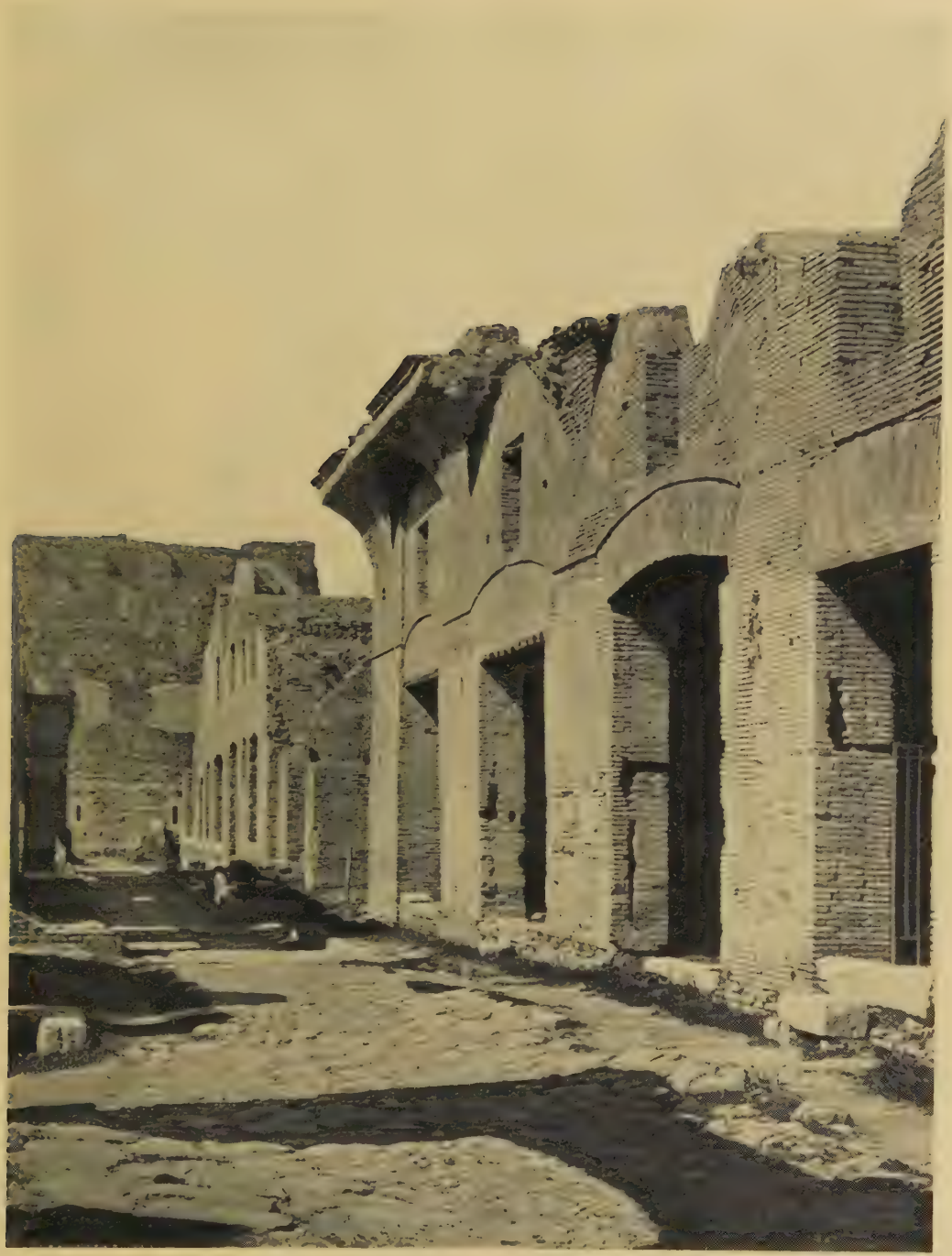


ATRIUM OF THE 'HOUSE OF THE SURGEON', FROM EAST



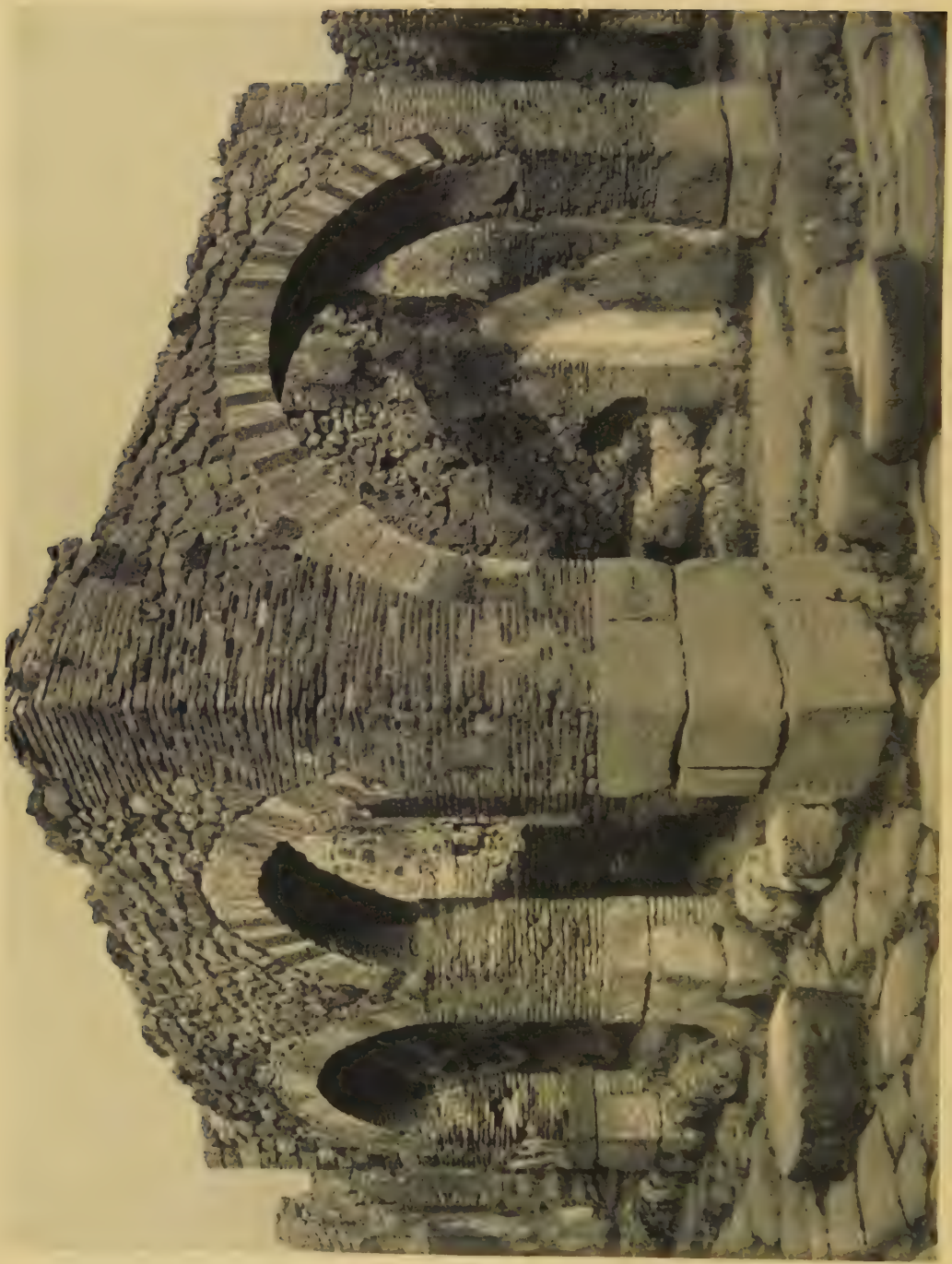
PORTICO OF THE 'HOUSE OF SALLUST', POMPEII (3RD CENT. B.C.), FROM SOUTH

FAÇADE OF THE 'HOUSE OF THE HANGING BALCONY', POMPEII (1ST CENT. A.D.), RESTORED



SOUTH FRONT OF THE 'HOUSE OF DIANA', OSTIA (LATE 2ND CENT. A.D.), FROM EAST

PLATE VIII



ARCHES DESIGNED TO CARRY A SECOND STOREY OVER THE PAVEMENT OF THE STREET, POMPEII (1ST CENT. A.D.)

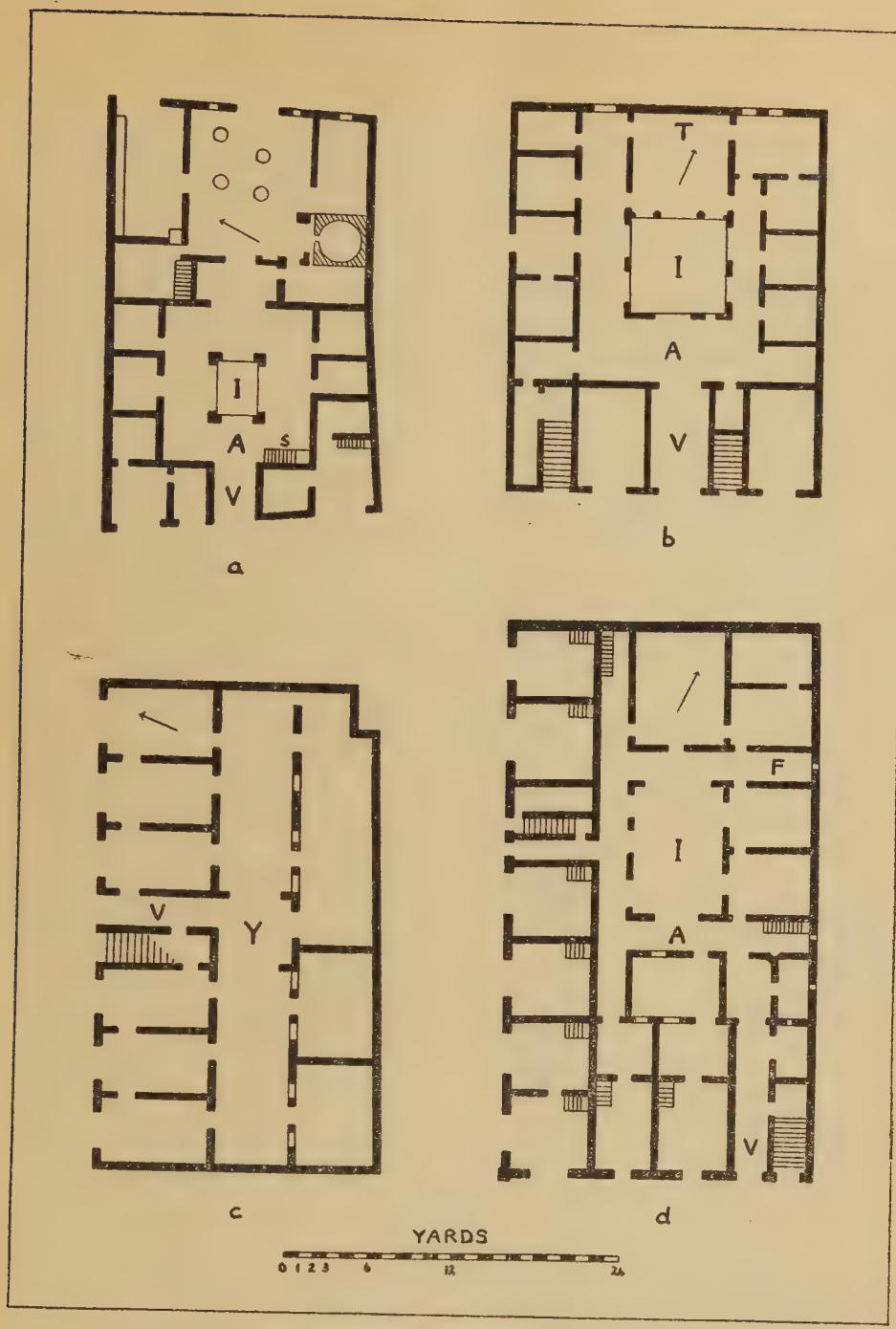


FIG. 2. HOUSES OF POMPEII AND OSTIA

a, Pompeii (A.D. 63–79). b, Ostia: 'House of the Round Temple' (early 3rd cent. A.D.).
c, Ostia: Corridor-house. d, Ostia: 'House of Diana' (late 2nd cent. A.D.).
A, Atrium, or area into which it developed. F, Ala. I, Impluvium, or Cortile. S, Staircase.
T, Tablinum. V, Vestibule. Y, Corridor

means of a corridor which runs round three sides of the cortile : on the fourth side (east), the area of the corridor has been included in the rooms, which, as a result, have to open one off the other, and its function is served by a line of doors. The west and south sides of the house, which are bounded by streets (the north and east sides abut on other buildings) are composed of shop-openings on the ground-floor and, above, of living rooms with windows facing over the street. The windows of the third storey open on to balconies which overhang the public causeway. Two staircases are found leading directly from the street to the upper rooms.

The similarities between the innovations which were taking place at Pompeii in A.D. 79 and the fuller developments which we find at Ostia a century later are striking. They go further than the row of shops which line the street and the staircases giving direct access from the outside to the upper rooms. They concern the whole composition and plan of the house. Brick-faced concrete, use of which at Pompeii was confined to points of special stress, has become universal and is employed in all the walls. The well of light formed between the impluvium and compluvium has been enlarged to the area of a cortile, while that portion of the atrium which surrounded the impluvium has been narrowed into a simple corridor on three sides and on the fourth has been replaced by a line of doorways. The Pompeian balcony which ran round the inside of the atrium at the level of the second storey has here become a second-storey corridor. The external balcony which was formerly supported by the wooden beams of the upper floor protruding through the outside wall is now composed of brick-faced concrete, like the dwelling to which it belongs, and grows out of the wall of the house in the form of a vault (*cf.* plate VI). The difference is one, not of principle, but of constructional detail.

Nor, must it be noticed, was this particular type of balcony unknown to Pompeian architects. In the public baths which lie at the north end of the Forum, the concrete core of such a balcony is plainly visible and leaves no doubt about its original shape, even though the brick facing has perished. This architectural feature was thus known to Pompeian builders.[10] The nearest approach to it which

[10] Professor Maiuri (*Atti etc.*, *loc. cit.*) believes that this balcony dates from the Sullan age, the period of the original construction of the baths. The yellow tufa, however, which occurs in its rubble core, is of a kind which appears not to have been used as aggregate before the middle of the 1st century A.D., and makes me incline to the view that the balcony is a later addition, dating from the last decades before the eruption.

is found in a private building is illustrated in plate VIII, where the vault of the second storey is supported by pillars which rise from the pavement of the street.

It is true that in the ' House of Diana ' little trace is found of the alae which had been an important feature of the Pompeian house during the first three periods. The only survival of them consists in a corridor to the northeast of the cortile (F). But we may notice that even in the latest Pompeian house (fig. 2, a) the alae as such have ceased to exist and their place has been taken by rooms of the ordinary kind. The alae were an integral part of the atrium and the supersession of the one involved the disappearance of the other.

The ' House of Diana ' at Ostia is but one of several Ostian houses in which connexions with Pompeii can be traced. An equally striking example is the so-called ' House of the Round Temple ', a plan of which will be found in fig. 2, b. The central cortile again occurs (I), here paved in marble and containing the remains of an ornamental fountain which recalls the ostentation of several late Pompeian impluvia. Round the cortile runs a corridor and to the north is a wide, open room reminiscent of the tablinum (T). Facing the street to the south were two independent shops and two staircases leading to the upper floors, which no longer survive. The whole is constructed of brick-faced concrete, the workmanship of which shows a considerable decline from that of the ' House of Diana ' and suggests a date somewhere in the 3rd century A.D.

Thus it seems reasonable to conclude that the Ostian houses which we have examined represent a logical development from the Pompeian house of the 1st century A.D.[11] In them we find united in a single architectural scheme and in their final shape all the tentative innovations and partial experiments which Pompeian builders were essaying in the years before the eruption. At Ostia, however, the architect is sure both of his plan and of his materials. The dominance of the atrium is quite broken down and the feeling that the house must ' face inwards ' has

[11] Though this paper is concerned primarily with the more typical and better-known houses of each period, it seemed worth while to include the plan of a so-called 'corridor-house' at Ostia (fig. 2, c), since it shows marked similarities with a house built on the fringe of the 'House of Pansa' at Pompeii during the 1st century B.C. (fig. 1, c, Y). A comparison of these two plans, in which rooms open off both sides of a corridor running the full length of the house (Y), suggests that, even in the less pretentious dwellings which grew up round the houses of the wealthy, a continuity of design can be traced.

gone. At the same time simple rubble walls have been abandoned and the danger of collapse removed by a material of unsurpassed solidity.

A few scraps of literary and archaeological evidence may next be considered which either tend to justify the claim that the growth which has been traced in the houses of Pompeii and Ostia was typical of a process going on in all Italian cities, or seem at first sight to deviate from this scheme of development and thus demand a word of special consideration.

The plans have been recovered at Ostia of some half-dozen houses dating from the republican era (before 30 B.C.), all of which are formed of rooms built round an atrium. Moreover, when Horace, about 20 B.C., wrote ' atria servantem postico falle clientem ',[12] he clearly implied that this type of house was common in Rome in his day. This evidence is in harmony with that of Pompeii.

It is, then, all the more surprising to find that the earliest references in literature to upper storeys concern a period as early as the middle of the 5th century B.C. Dionysius of Halicarnassus[13] preserves the tradition that, by a ' lex Icilia ' which was passed at this time, the Aventine Hill was handed over to the Roman plebs as building land, and that in the ensuing rush for sites families were constrained to live two or three together in the same house-block, some of them having the ground-floor rooms and others those above. Dionysius does not state that these dwellings were erected on the top of the Aventine and it is thus not impossible that they were propped against its slopes. The same cannot, however, be said of a house which is mentioned by Livy as being in existence two centuries later. Livy states that among the portents which happened in 218 B.C., at the crisis of the Hannibalic War, an ox climbed unaided to a third floor in the Forum Boarium and, terrified by the uproar of the inhabitants, hurled itself to the ground.[14] The Forum Boarium was a flat area between the river Tiber and the Palatine Hill, and thus the passage indicates that as early as the 3rd century a three-storey building was erected on a level site.

We know nothing, however, about the form of the buildings mentioned by Dionysius and Livy or of the materials of which they were made. It is significant that Livy's portent is supposed to have occurred

[12] *Epistles*, I, 5, 31.

[13] X, 32, 4.

[14] XXI, 62, 3.

just about the time when good, hard mortar came into use at Pompeii. The discovery of lime, so far as our evidence goes, seems to have been the circumstance which made possible the extensive use of upper storeys. Hence we cannot merely dismiss Livy's portent as imaginary or his third storey as a reflection into the past of a feature of his own times, since the development which can be traced in Pompeii during the 2nd century may have begun in large cities a few decades earlier. Plautus, it is to be noted, made Jupiter jokingly remark ' in superiore qui habito cenaculo ',[15] as though the novelty of upper floors had not yet worn off and they could still be made the subject of a jest.

But if we infer that in 218 B.C. a third storey was as unusual as the feat performed by the ox, the difficulty created by the passage of Dionysius appears to be still more acute. The implication of his words is that, in the period of the ' lex Icilia ', houses were required in a hurry for humble people. Such people, even at Pompeii, did not live in atrium-houses but in humbler dwellings, usually situated on the fringes of house blocks. The atrium of the types which we have illustrated was the house *par excellence*, the residence of well-to-do citizens. The hovels of the poor must have been constructed on a far less pretentious scale,[16] and the absence of survivals of them today suggests that they were made of wood and wattle. It is not difficult to carry an unpretentious house with wooden framework and wattle walls to the height of a second storey, and it is quite conceivable that constructions of this type were known in Rome during the 5th century B.C. It is a far cry, however, from anything that could be erected of such materials to the ' House of Diana ' at Ostia. The passage of Dionysius, as well as the portent recorded by Livy, is altogether too weak a foundation to support an argument that house-blocks of the Ostian type had developed in Rome at the periods to which they refer.

If we pass on to the 1st century B.C., we find that difficulties have been created by a passage of Cicero, who, as early as 63 B.C., had spoken of Rome as ' in montibus positam et convallibus, cenaculis sublatam atque suspensam ', and had compared it (to Rome's disadvantage) with Capua—' planissimo in loco explicata ac praeclarissime sita '.[17] These words have been used to support the argument that Rome was composed

[15] Amphitruo, III, 1, 3.

[16] The picturesque wooden huts, propped one against the other on the east beach at Hastings, Sussex, and used by fishermen to store their tackle, consist for the most part of three storeys.

[17] *De Lege Agraria*, II, 35, 96.

of houses of the Ostian type, while the dwellings of Capua resembled the one-storeyed Pompeian atrium.[18] Such use of the words is, however, unwarranted. Rome's inferiority to Capua, according to Cicero, lay in its site and general disposition, and the absence of any words applied to Capua, parallel to ' cenaculis sublatam atque suspensam ', shows that this phrase is merely intended to corroborate his description of the site of the city.

It is more likely that Cicero's reference to ' cenacula ' concerns the practice of increasing the flat building area on the top of a hill by means of terraces projecting over the sides and supported by pillars. Such terracing was later to be carried out on a grand scale in the imperial palace on the northeast slope of the Palatine. It was exemplified at Pompeii during the century and a half which preceded the eruption. The old city walls fell into disrepair on the west and southwest sides where the slope of the hill on which the town was built dropped sharply, and their place was taken by houses erected on terraces, piled against the hill's steep sides, whence they enjoyed a magnificent view towards the island of Capri. The words ' sublatam atque suspensam ' are quite applicable to a house supported by structures of this kind. Finally, it is noteworthy that, at Herculaneum, it was the houses which were escarped on the rocky slopes of lava facing the sea that possessed verandas and terraces of outstanding magnificence, while the houses of the centre of the town ' remained faithful to the type and lay-out of the Samnite house of the pre-Roman era '.[19]

It is thus conceivable that special circumstances such as the existence of a steep slope might tempt builders to use it in buttressing a house of many storeys, even though they would not risk such a house on level ground, and might lead at any time to a type of building to which Cicero's words were not inapplicable. ' Cenaculum ', in a broad sense, meant any room that had to be approached by stairs, and it is reasonable to suppose that it could be used equally as well in describing a house piled against the slope of a hill as in a multi-storeyed house on a flat site. Thus it is unsafe to use Cicero's words as evidence that houses of the Ostian type had been evolved at Rome by 63 B.C.

It is clear, however, that before the end of the Augustan age the vertical tendency in architecture had begun, for Strabo states that

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[18] G. Calza, ' Le Origini Latine dell' Abitazione Moderna ', in *Architettura e Arti Decorative*, 1923.

[19] A. Maiuri, ' The People of Herculaneum ', an article in *The Times* of 29 Sept. 1931.

Augustus limited the height of new buildings to 70 feet (*i.e.* 70 Roman feet—about 68 English feet).[20] It is uncertain how high the buildings of Pompeii were before their destruction, since after the eruption the tops remained protruding above the lapilli and ash which covered the town, and for that reason have perished. To judge from present remains, however, few buildings can have exceeded the height of 40 feet. It would be interesting to know precisely what kind of buildings at Rome had exceeded the 70-foot limit, for the application of Strabo's words cannot be limited to private houses. But in the absence of such knowledge, his statement proves only that the vertical tendency began in Rome a decade or two earlier than in Pompeii and that it reached greater heights.

Such priority is not surprising, for the district of Rome was the chief centre of the manufacture of bricks and could provide a continuous and cheap supply. This architectural development was as closely bound up with the use of brick as the similar tendency today depends on the use of steel. There is some indication that at Rome, as at Pompeii, the 1st century A.D. was a period of experiment in which the speculations of builders did not always coincide with the demands of public safety, for Nero is said to have reduced Augustus' maximum and Trajan to have fixed it finally at 60 feet.

Two points remain to be mentioned which serve to link up the ancient Italian house, on the one hand with buildings which have been taken to be subsequent developments from it, and on the other hand with certain supposed survivals from prehistoric times.

The first concerns a suggestion that the colossal blocks of flats (casamenti), surrounding a central garden, which are a typical feature of Italian town-planning schemes of the present day, are directly descended from ancient houses of the Ostian pattern.[21] The suggestion gains plausibility if we view the medieval palazzo, with its internal courtyard, as a link between the two. In a country which is scorched by strong sunshine in summer, the central cortile is naturally a persistent feature, since some part of it is always in the shade whatever the direction of the sun.

Again, once the continuous development of the cortile from the atrium is realized, the problem of the original form of the atrium itself is put in a clearer light. The common view is that it developed from a

[20] V, 134.

[21] G. Calza, *op. cit.*

wigwam-like hut with a hole in the top to let out the smoke which rose from a central hearth. Gradually the area of the hut was increased ; partitions were placed round its walls and the space between developed into rooms. The hole in the roof finally became so large that the rain came through it and thus the impluvium was devised.

An alternative theory has been put forward, though it has not received much recognition up to the present time, according to which the original nucleus was a group of covered huts which were placed side by side for protection and convenience so as to enclose a small square area.[22] This enclosed area, in origin a farmyard or cortile, developed among town-dwellers into the atrium as we know it in the ' House of the Surgeon '. The town-house, in fact, developed from the same fundamental type as the farmhouse of classical times, which was composed of a yard surrounded on all sides by buildings.[23] Such a fundamental identity of origin is not unnatural among a people which was mainly agricultural. This theory is in harmony with the view put forward in this paper in that it suggests that the atrium, which we have represented as the ancestor of the cortile, was in origin itself an open yard and not merely an enlarged smoke-hole.

If this view is correct,[24] the bee-hive dwellings of Apulia, which were recently illustrated in ANTIQUITY and said to be ' certainly prehistoric ',[25] and the wattle huts of Gabii, which Ashby cites as possibly giving ' an image of those in which the primitive population must have dwelt ',[26] thus fall into the scheme of development which we are trying to trace as direct descendants of the huts which were, at a prehistoric period whose limits can no longer be determined, placed together round a central area and thus formed the first farm-yard. This hypothetical, prehistoric farm-yard : the old atrium of Pompeii ; the well of light of the ' House of Diana ' ; the cortile of the medieval palazzo ; and the enclosed garden of the modern casamento—all these are the links of a broken chain which stretches from prehistoric times to the present day.

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[22] G. Patroni, 'L'Origine della Domus', in *Rendiconti della Reale Accademia dei Lincei*, XXI (1912), pp. 206ff.

[23] R. C. Carrington, 'Studies in the Campanian Villae Rusticae', fig. 16, *Journal of Roman Studies*, XXI (1931).

[24] For the difficulty of the subject, see D. S. Robertson, *A Handbook of Greek and Roman Architecture*, pp. 304–5.

[25] December 1932.

[26] *The Roman Campagna in Classical Times*, p. 39.

The Azanian Civilization of Kenya

by G. W. B. Huntingford

DURING the last few years archaeological research has revealed a remarkable, though not altogether unexpected, view of Stone Age man in Kenya ; and at the same time it has been realized that there existed at some period between the Stone Age and medieval times a civilization which has left traces over a large part of East Africa. This civilization appears to be quite distinct from the Stone Age cultures, and there is so far no evidence to connect the two, nor is there any similarity between them. For the Stone Age men lived in caves and unbuilt habitations : while the men whose civilization I shall try to describe built substantial enclosures of stone, dug hut-circles and revetted the walls, made properly engineered roads, and possessed the art of irrigation. This civilization I propose to call ' Azanian '[1] in order to distinguish it from the Stone Age cultures and from the Islamic ruins found in certain parts of East Africa. It has been claimed that traces of this civilization, in the shape of roads and irrigation works, occur in Abyssinia, Uganda, Tanganyika and North Rhodesia[2] as well as in Kenya. But the stone enclosure and hut-circle, which to my mind are the distinctive features, have so far been reported only from Kenya and Gala-land (South Abyssinia) ; though for the present we may assume that the Tanganyika remains also belong to it.

In this paper I shall refer chiefly to Kenya, and though it will not be necessary to describe the geography in detail, it may be as well to note the main features. From the Indian Ocean to Lake Victoria, a distance of some 500 miles, the land rises gradually from sea-level to 9000 feet, descending again to below 5000 feet at Lake Victoria. This country has five natural stages : first, the coastal plain, a narrow strip

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[1] From Ἀζανία, the name given by classical geographers to East Africa from Cape Guardafui to the southern limit of the known world (about lat. 10° S). The word may mean ' the dried-up country ', from ἀζαίνω, ' I am dry ' ; *cf.* azaniae nuces, ' dried-up pine-cones ', Pliny, *Nat. Hist.* XVI, 44. For large tracts of East Africa this meaning is most appropriate.

[2] Capt. G. E. H. Wilson in MAN, 1932, 298.

often sandy and covered with thorn-scrub, which rises gradually to the second stage, a tract of thorn-scrub (1000–3000 feet), in parts a semi-arid uninhabited wilderness, rising again to an elevated region of

SKETCH-MAP OF KENYA COLONY

Azanian areas shaded : ////////////. Kenya boundary shown by thick black line

grass-land (3000–5000 feet), where the Highlands begin. Through this part runs the Rift Valley, and the stupendous escarpments associated with it, forming the fourth and highest stage, rising to over 9000 feet

where the Equator crosses the Mau escarpment ; the land then drops to the basin of Lake Victoria. This country is very unequally watered, and the rainfall very uneven. There are two distinct rainfall areas, on the east and on the west of the Rift Valley. The western area has on the whole a higher rainfall, and the number of permanent rivers and streams is greater ; it is in this area that Azanian remains are most numerous and most advanced, for though they occur in less fortunate parts, they are found here in greater perfection, and here too, from long. 35° to 37° 30′ E, is the region now inhabited by European settlers. In the northern part of Kenya conditions are different. Once the grass and forest lands of Laikipia or Mount Kenya are passed, a large tract of unpleasant desert is entered, the Northern Frontier Province of Kenya, beyond which lies Abyssinia and Gala-land, where conditions improve. To the south of Kenya lies Tanganyika Territory, where ancient remains have been noted, an inhospitable country with miles of waterless land and thorn-scrub.

The Azanians have left behind them numberless traces in the shape of buildings and earthworks of various kinds. The following classification covers all types so far recorded :—

I. Stone Enclosures : A, single, with entrance-passage ; B, single, without entrance-passage ; C, double.

II. Hut-Circles : A, of earth ; B, of earth, revetted with stone ; C, like A or B, but with an annexe.

III. Tumuli and Cairns.

IV. Linear Earthworks.

V. Irrigation Works.

I. The stone enclosure consists, in its simplest form, of a roughly circular dry-stone wall surrounding a slight hollow. In some enclosures an entrance-passage occurs, roofed with slabs of stone (fig. 1). An enlarged form of this is the double enclosure, in which two enclosures, each having its own entrance, stand side by side sharing a common centre-wall (fig. 2). These buildings vary from 25 to 60 feet in diameter, and the walls, which are mostly free-standing, range in height at the present day from 3 to 10 feet.

II. The hut-circle, in its simplest and commonest form, is a circular hollow dug out on a slope, with a nearly level floor, and an entrance on the lower side protected by banks formed of the upcast

from the excavation (fig. 3). The hearth is generally near the door. The second type of hut-circle is constructed in the same manner, but the sloping sides are revetted with stonework, generally of very rough execution, though sometimes attempts at coursing and bonding are seen. From these developed type C, in which a semicircular hollow, with its floor at a higher level than the main floor, forms an annexe at the back or side of the hut. The depth of these circles varies from 4 to 10 feet, and the diameter from 8 to 30 feet. In some places a large

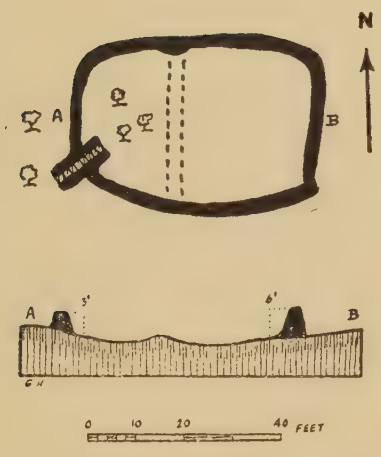

FIG. 1. PLAN AND SECTION OF STONE ENCLOSURE ON FARM 906, UASIN GISHU

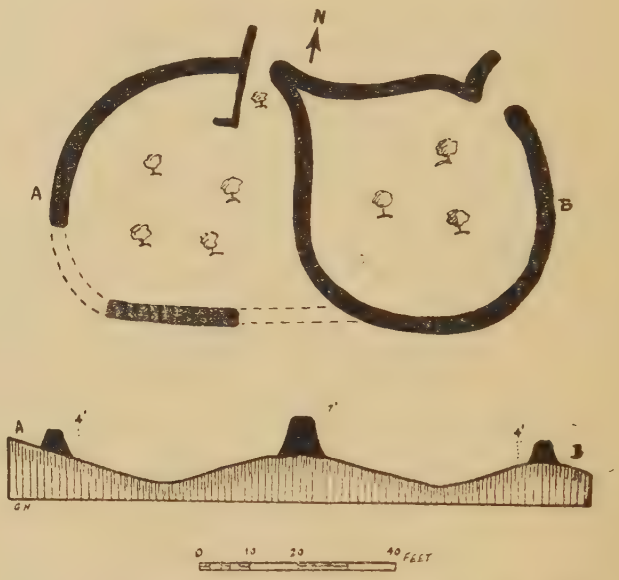

FIG. 2. PLAN AND SECTION OF DOUBLE STONE ENCLOSURE ON FARM 307, UASIN GISHU

number of circles are grouped together and form villages, and sometimes two and even three circles open into one another ; the largest village I have seen contains 60 to 70 circles.

These two forms of construction are the most noticeable feature of Kenya Azanian work ; and the earth-circle is found throughout the Azanian area, in the districts of Trans-Nzoia, Uasin Gishu, Nandi, and Kericho (west of the Rift Valley), and Lai-Kipya, Meru, Nakuru, and Kyambu (east of the Rift Valley), as well as in northern Tanganyika.

The stone enclosure appears to be peculiar to Uasin Gishu, and the revetted circles occur there, in Nandi, and near Nakuru.[3]

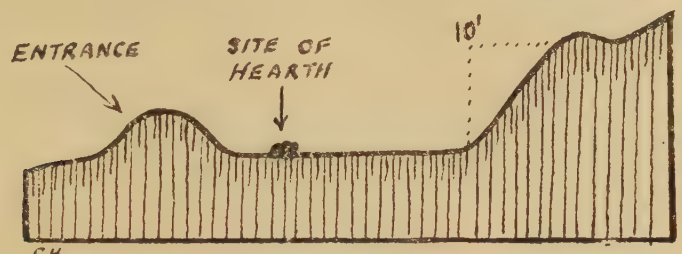

FIG. 3. (A) SECTION OF A TYPICAL EARTH HUT-CIRCLE

III. Tumuli, or artificial earth mounds exist in a few places: one, which is 8 feet high and 45 feet long, is in the middle of a large

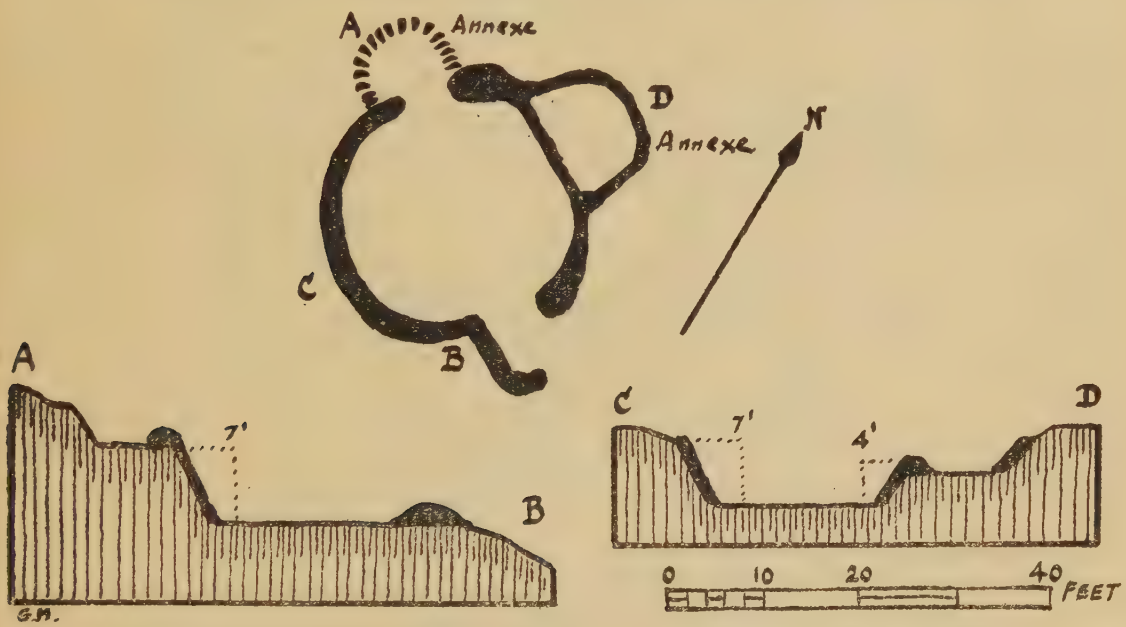

FIG. 3. (B) PLAN AND SECTIONS OF A REVETTED HUT-CIRCLE, TUKTUK HILL, KIPKAREN

pit-village in Kipkaren (fig. 4); three others stand on the bank of the Chemnoet river, some 3 miles away, apparently guarding a ford. In a

[3] Dr Leakey, in *Stone Age Cultures of Kenya Colony*, claims that the Nakuru circles belong to the Gumbau B phase of the Neolithic period.

country where large ant-hills abound, it is not always easy to distinguish artificial from natural mounds ; but a definite flat summit, and hollows at the base from which the material was dug, are indications that a mound may be artificial.

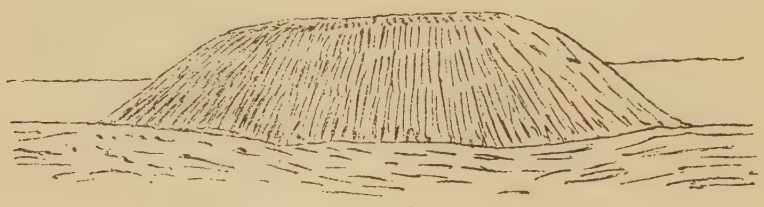

FIG. 4. TUMULUS IN PIT-VILLAGE, TUKTUK, KIPKAREN
(Height, 8ft. Length, 45 ft.)

Cairns, on the other hand, are unmistakable. They are mounds of stones, up to 15 feet in height, and are beyond doubt graves. In Kenya they are recorded from Wajhir and Merti (Northern Frontier Province), the Sabaki Valley (Malindi district), the Nyando Valley (south of Nandi) and eastern Nandi (fig. 5). The latter, from evidence of tradition, are probably 19th century Masai graves[4] ; the former may be referred tentatively to the Azanians.

FIG. 5. GROUP OF CAIRNS LO-'L-MENENGAI ('PLACE OF GHOSTS') EAST NANDI

IV. Under the term Linear Earthworks are included (A) artificial works which are beyond doubt roads ; (B) works which appear to be ditches rather than roads. Undoubted roads, which in some places are graded, and in others pass through hillsides in cuttings not unlike

[4] G.W.B.H. in *J.R.A.I.*, LVII, 439, 460.

railway cuttings, and cross swampy ground over carefully made embankments, occur in Kenya and Tanganyika. Such a road, with cuttings and embankments, crosses the east side of the Uasin Gishu plateau (fig. 6). Sometimes a ditch may be really a sunk road, as in the case of a series which encloses on two sides the farm where I live. Here in 1922, before the land was ploughed, two lengths of ditch were visible for a distance of over 600 yards, running between low banks from one river to another, and re-appearing across the river, which

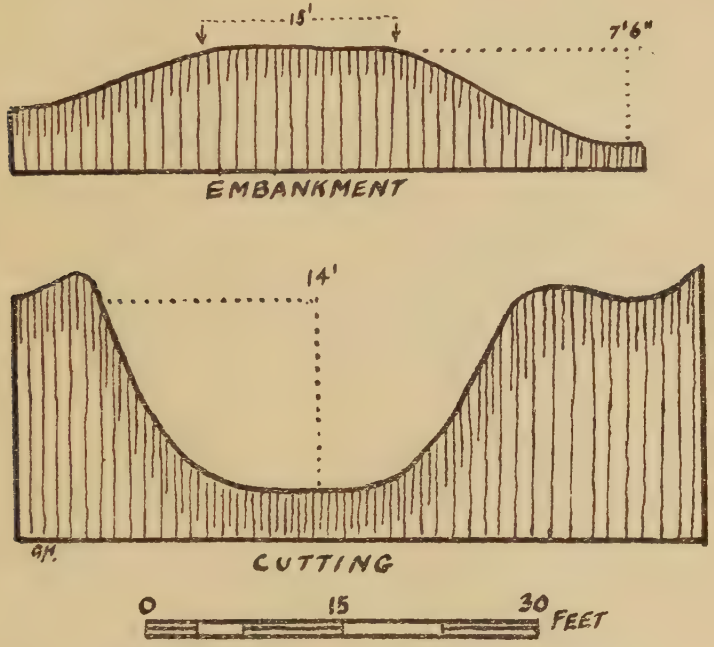

Fig. 6. SECTIONS OF ANCIENT ROAD EAST OF KAPTEKAT RIVER, UASIN GISHU

must have been crossed by a wooden bridge, as it is not fordable there (fig. 7). On Tilolwa Ridge in Nandi occurs a ditch which is plainly not a road, and equally plainly not of natural origin ; a length of some 250 yards (no more is recorded) has a higher bank on the upper side than on the lower (fig. 8).

V. Irrigation works include canals, terraces, and wells. So far, ancient canals have been seen in Kenya in Nandi only: the best example I know is 5 feet deep and 3 feet wide in the last 100 yards of its course.

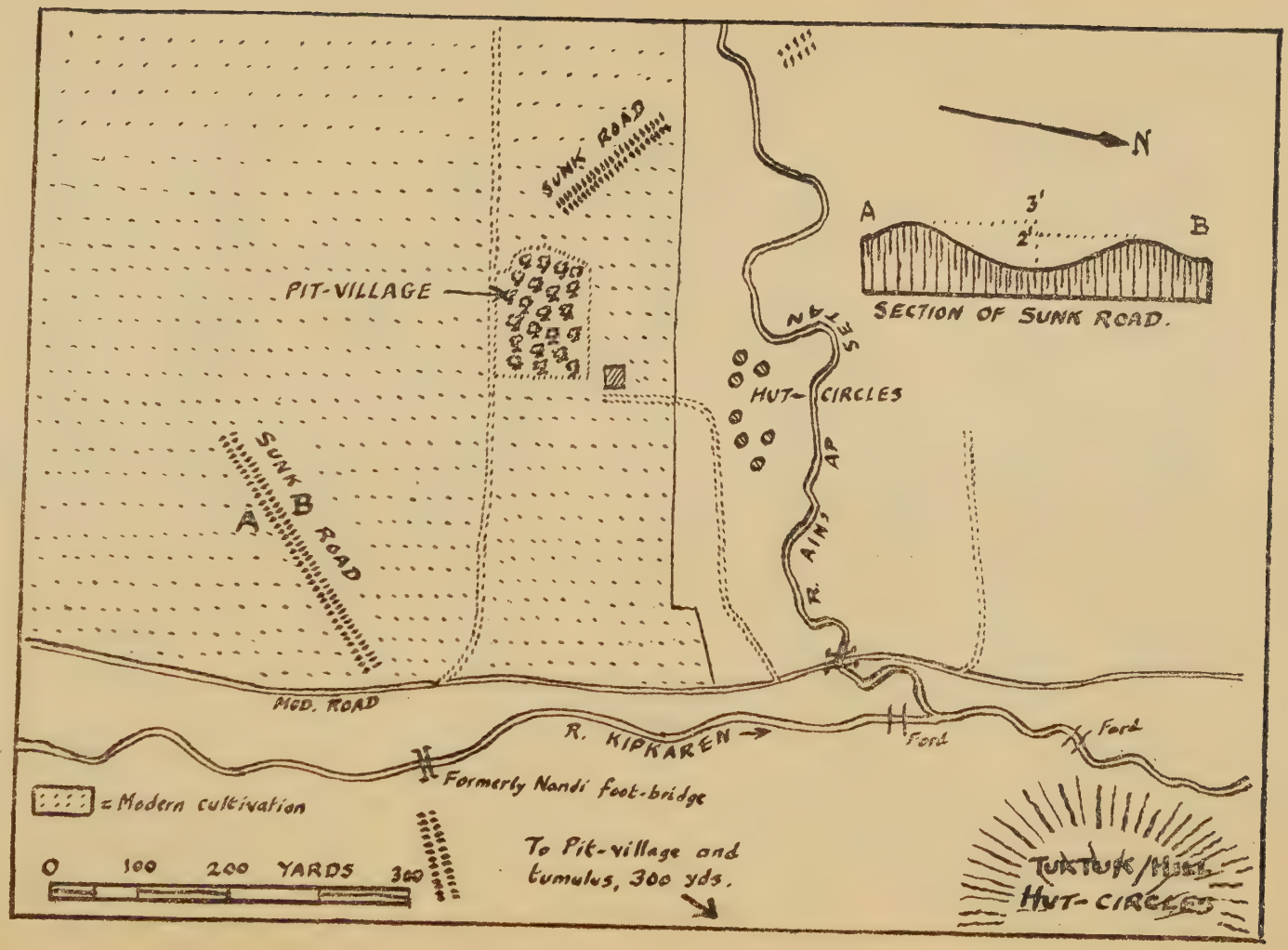

FIG. 7. MAP OF SUNK ROAD, AIN' AP SETAN, KIPKAREN

Irrigation by means of such canals, often of some length, is still practised in Kenya by the Suk and Marakwet (backward tribes of the Nandi group) on the west escarpment of the Rift Valley. They are too barbarous to have learned it themselves, and it is probably an Azanian legacy. Terracing, which consists ' in all cases of parallel terraces following the contours of the hills ', has been noted in many places in Tanganyika,[5] though not yet in Kenya. Wells occur in at least five places in Kenya :

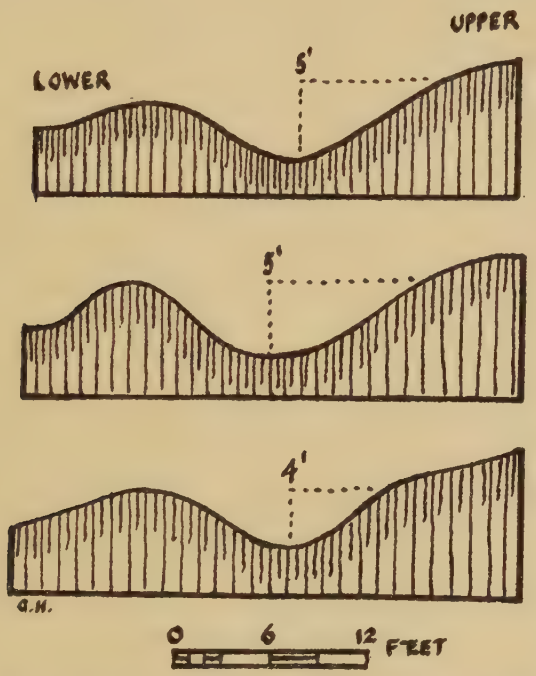

FIG. 8. SECTIONS OF DYKE ON TILOLWA RIDGE, NANDI

Eil Wak, Katulu, Wajhir, and Arbo in the Northern Frontier Province, and at Selengei in Masai. At Eil Wak the wells are some 60 feet deep, and 15 feet wide at the mouth ; at Wajhir there are some 400 wells in an area of 2 square miles, and many of them still function.[6] This area, where cairns also occur, is desert, without rivers, and water can only be got by digging ; other Azanian areas have sufficient river-water to obviate the need of well-sinking, though not of irrigation.

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[5] Wilson, *loc. cit.* [6] C. B. G. Watson in MAN, 1927, 30.

The use of stone for buildings—however rough, the construction of roads, and the use of irrigation and terraces in agriculture, implies some sort of a civilization ; and the remains we have to deal with, if homogeneous, seem to merit description as a ' civilization ' rather than as a cultural phase of a civilization. And the study of them, as far as it goes, reveals certain facts which are worthy of notice. Firstly, the Azanian areas in Kenya and northern Tanganyika are to a great extent those now occupied by the modern Nilo-Hamites (the Masai and Nandi groups). Secondly, the population was much larger than it is at the present day ; a preliminary survey of Nandi which I carried out some years ago shows that the number of hut-circles (which are unquestionably dwelling-places) is at least ten times the number of modern dwelling-huts in certain areas. Thirdly, the Azanians seem to have preferred, on the whole, to build their dwellings higher above the rivers than do the modern natives. And lastly, the agricultural system in the more level areas of Kenya, where terracing is not necessary under methods of hand-cultivation, must have been very similar to modern native methods ; for a cultivated plot, once abandoned, rapidly reverts to bush, and after a space of years can no longer be distinguished.

These are the main features of the Azanian civilization as known to me. Now who were the Azanians, and when did they flourish ? The question is difficult, but an answer may be attempted. From native tradition in Kenya and Tanganyika, which space forbids to quote in full, we gather that the Tanganyika terraces etc. were made by a people called the Bearded Ones, the Tall Ones, or the Enemies, who came from the north[7] ; that the Uasin Gishu remains were the work of a tall, ' red ' people who came from the north[8] ; that the Northern Frontier wells and cairns were made by a people called Maanthinle, which is said to mean ' Tall People '; and that these names refer to one race which came from the north. Whatever race it was, it has long ceased to exist, and since we find no tradition that the ancestors of modern tribes (*e.g.* Masai, Nandi) ever came in contact with it, we may suppose that the time when these modern tribes entered Kenya will give us at least one terminus. This date I would place

[7] Wilson, *loc. cit.*

[8] G.W.B.H. in *Journ. E. Africa and Uganda Nat. Hist. Soc.*, 1926, 24, 25. I should add that the Masai and Nandi ascribe the ruins to a people they call ' Sirikwa ', who historically were a division of the Masai, and whose name has become a synonym for ' the ancients '.

about the beginning of the 15th century A.D.[9] At one time I thought that there might be a connexion between the Rhodesian ruins and those in Kenya ; but against this may be urged : (1) the workmanship and construction are very different ; (2) Zimbabwe has been shown to be Bantu work, while for Azania there is a certain amount of evidence for an Hamitic origin. Rhodesia, it is true, can show terraces, roads, and hut-circles, as well as forts, which last are absent from Kenya ; but the general character of the Kenya Azanian work seems Hamitic rather than Bantu. No defensive works in Kenya can be attributed to the Azanians ; and earthworks recently discovered near the Kakumega gold-field were probably made by the Bantu Kakumega as defences against the marauding Nandi, and belong to the 19th century. Their defences consist chiefly of bank with little or no ditch.

Many years ago Sir H. H. Johnston referred to the use of stone ' for building rough graves [cairns], making rough walls [enclosures] or even setting up stone circles [? hut-circles] on the plateaus near Mount Elgon ', and traced these to ' the not far-off influence of the Hamite '.[10] In Somali- and Gala-land—the cradle of the Hamites—there are ruins ascribed to a people ' who preceded the Gala ', called Awwalin, or ' ancient inhabitants ',[11] which consist of blocks of dressed stone in regular formation, parallel revetment walls on hills commanding passes, ancient water-tanks,[12] and ' hollow rings of rough blocks, circles measuring about a cubit in diameter '.[13] This civilization seems to have been swept away by the Islamic conquerors during the 8th century A.D.[14] In modern times, too, the Gala, who are Hamitic and of great antiquity, live in huts composed of circles of rough stones roofed with grass,[15] or in some cases, slabs of stone.[16] They also erect cairns, which are circular, and vary in height from 12 to 15 feet, with an average diameter of 24 feet.[17] Burton describes ancient ' Gala ' cairns as sometimes having internal chambers propped with timber,

[9] I have not space to give the details of this dating in full, and can only say here that it is not a mere guess.

[10] *The Opening Up of Africa* (Home University Library), p. 62.

[11] Sir R. F. Burton, *First Footsteps in East Africa*, I, 116.

[12] Encyclopaedia Britannica, 11th ed. XXV, 380.

[13] Burton, *loc. cit.* I do not know whether he means hut-circles ; if he does, ' a cubit ' for the diameter must be an error.

[14] Encycl. Brit., *loc. cit.*

[15] Encycl. Brit., XI, 414.

[16] Seligman, *Races of Africa*, p. 123.

[17] Encycl. Brit., XXV, 380.

and containing—in one case—a gold bar and ring ; from other cairns he heard of ' women's bracelets, beads, and similar articles still used by the Gala '.[18] He also mentions the ancient and widespread custom of people adding a stone to a cairn as they passed by,[19] reported also of the Masai by Hollis.[20]

From all this, we may surmise that a civilization which flourished in the Horn of Africa at some time during the first seven hundred years A.D. was destroyed by Islam, that its makers retreated southwards through Kenya (where Islam never penetrated), and that it finally came to an end somewhere about the 14th–15th century, possibly earlier. That it was of Hamitic rather than Bantu origin seems to be an unescapable conclusion. Such at any rate is the view I take of it. And it is not unreasonable to suppose that the Azanians had a hand in the establishment of the ports which existed from an early period on the east coast, such as Adule,[21] the modern Zeila, called Audal by the Somali ; Aromatophora, or the ' Spice-market '[22], called Portus Mossylicus by Pliny, ' to which cinnamon is brought '[23] ; and Rhapta,[24] probably Pangani, south of Tanga ; though as to the origin of these ports we are very much in the dark. In Pliny's day, the interior of East Africa was truly a terra incognita, and the ancient knowledge of it may be gauged by Pliny's words : ' it is said that in the parts interior from the east coast there are people whose whole face is flat, without a nose ; and that some have no upper lip, others no tongue. We hear also of people who have no nostril nor any opening in the face beyond a single hole through which they breathe, and through which they drink by means of an oaten straw, the grain of which, growing wild, they eat. Some tribes use nods and gestures instead of speech, and before the time of Ptolemy Lathyrus King of Egypt were ignorant of the use of fire '.[25] Pliny, it is true, names the ' Ploughmen Aethiopians '

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[18] *First Footsteps*, II, 125. [19] *ibid.*, I, 130.

[20] Sir A. C. Hollis, *The Masai*, p. 306.

[21] Ptolemy, IV, 7. Ἀδούλη.

[22] Ptolemy, IV, 7. Ἀρωματοφόρα, Ἀρωμάτων ἐμπόριον. Near Guardafui.

[23] Pliny, N.H., VI, 34.

[24] Ptolemy, IV, 7. τά Ῥαπτά, which in Greek means ' the stitched things ', and may refer to the use of inflated skins for sailing upon ; such a use in the Arabian gulf is both ancient and modern.

[25] Pliny, N.H., VI, 35.

near Adule,[26] who possibly represent the plough-using Gala; and Ptolemy calls the people near Rhapta the 'Rhapsian Aethiopians',[27] who cannot now be identified.

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[26] N.H., vi, 34.

[27] iv, 7. Ῥάψιοι Αἰθίοπες.

The Age of the British Flint Mines

by Grahame Clark and Stuart Piggott

THERE were two main sources of supply of flint available to early man,—superficial deposits whether in the form of river gravels, sea or lake beaches, or nodules incorporated in surface soils, and deposits beneath the surface of the ground for which it was necessary to mine or quarry. While it is generally true to say that mined flint was of superior quality and more easily worked than the superficial variety it must not be forgotten that the magnificent honey-coloured flint of Grand Pressigny, which in the dawn of the first age of metal was traded to Switzerland, North France, Brittany, Belgium and even Wessex,[1] occurs naturally in the form of surface nodules. In passing it may be observed that the so-called *livres de beurre*, the most typical product of these Chalcolithic workshops, are technically no more nor less than elongated tortoise-cores from which were struck long flakes with faceted butts.[2] In view of the play that has been made with the presence of ' Mousterian ' technique in our British mines this is not without its significance.

The distribution of flint mines in Europe[3] is indicated on the map (fig. 1). Their control by cretaceous formations is fairly evident as

[1] In the Blackmore collection at Salisbury there is a fine narrow flake, six inches in length and of the unmistakable honey-coloured flint of Grand Pressigny. It has a shallow triangular section, showing two primary flake-scars with a central ridge of intersection opposite the flat bulbar surface. The butt is faceted. On either side of the pointed end there is secondary flaking from both edges but in each case on the upper face only. Near the butt-end there is a notch on one edge. Both the nature of the raw material and the technique of working betoken a product of the workshops of Grand Pressigny. This object, which is hitherto unpublished, is labelled as coming from ' Furlong Farm, West Grimstead ', a site to the southeast of Salisbury.

[2] M. C. Burkitt, *Prehistory*, p. 68.

[3] Only well authenticated flint mines have been included in the map. Thus, so far as England is concerned, we have made various omissions, chief of which are the primitive pits at Maumbury, sometimes classed as flint mines. These pits are admittedly baffling, but the flint mine explanation seems to us definitely wrong : *e.g.*, the base of pit 1, which is 30 feet deep, is described as ' basin-shaped ' and as having a diameter of 1.5 feet by 1.2 feet. The improbability that anyone would sink a shaft 30 feet to extract less than two square feet of flint does not require stressing. See *Dorset Field Club*, vols. xxix–xxxi. Other flint mines are suspected at High Wycombe (*Museums Journal*, 1902–3, 11, 156), and at three sites in Norfolk : Buckenham, Eaton, (both in *J. Ethn. Soc. Lond.*, ser. 2, vol. 11, 432), and Whitlingham (William Arderon, Royal Society, 1746, and information from H. H. Halls) ; in none of these cases, however, is the evidence sufficient to justify inclusion on the map.

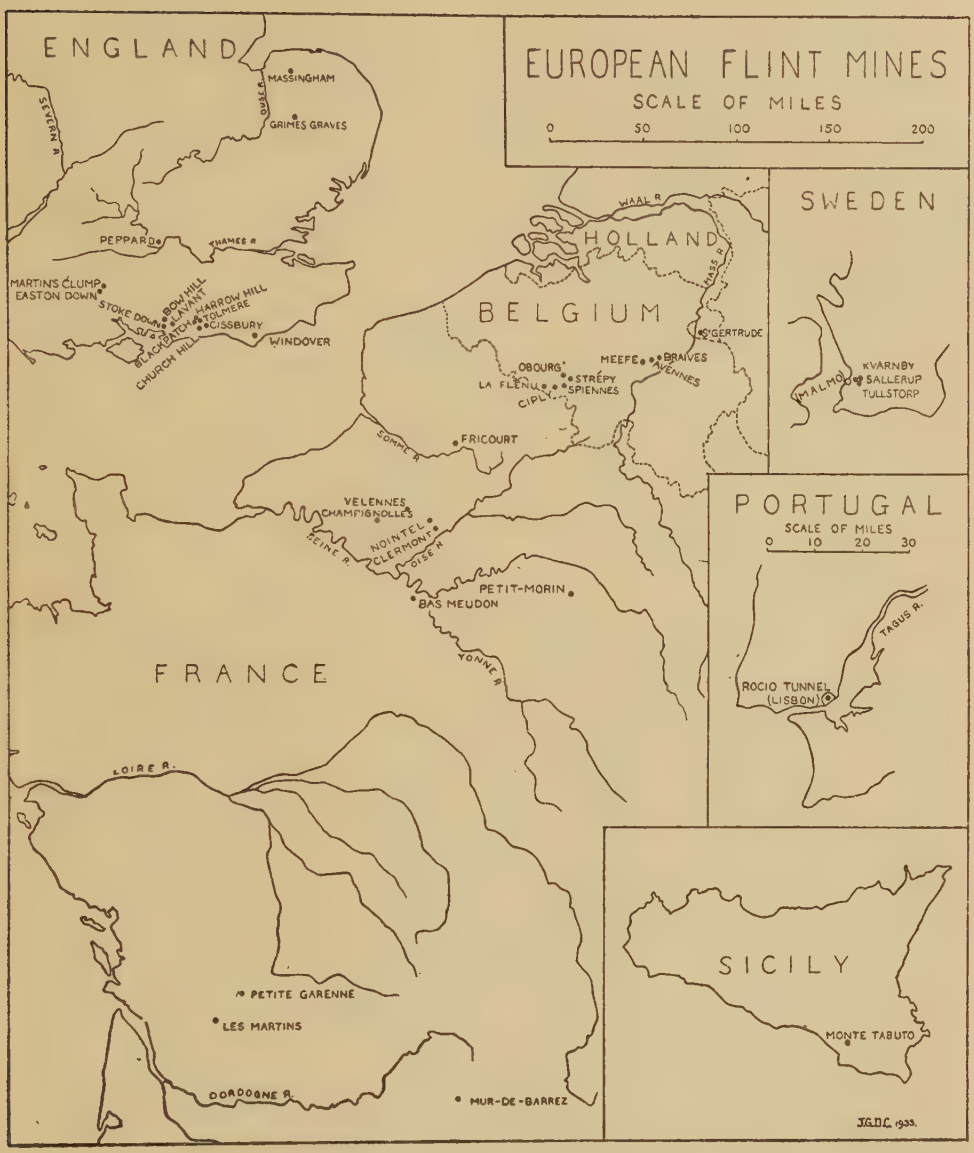

FIG. 1. DISTRIBUTION MAP OF EUROPEAN FLINT MINES

is only to be expected, though the Chalcolithic mines at Monte Tabuto near Syracuse are in tertiary limestone. The cherty flint in this case was extracted by lateral galleries driven into the hillside, sometimes for a distance of 50 metres and excavated by basalt axes. The Swedish mines near Malmo which endured from Neolithic to Early Iron Age times are interesting as they are driven into chalk, which geologically speaking is not *in situ*, but consists of huge glacial rafts. We have no space here to discuss the affinities of the English mines with those in France, Belgium and Holland, though this is brought out to some extent by a consideration of the antler and bone mining instruments found in the mines of these regions (fig. 2). Thus the typical antler pick (1) is found, among other places, at Grimes Graves, Cissbury, Harrow Hill, Blackpatch, Avennes, La Petite-Garenne, Champignolles, Spiennes and Obourg, while the so-called ' rake ' (2) occurs at Grimes Graves, Blackpatch, Harrow Hill, Champignolles and Spiennes, a two-piece example of which the prongs are here illustrated (4), also coming from this latter site. Other types include perforated axe-hammers (3) and hammers (11), antler crown hammers (7), wedges and levers of various types (5, 8–10), scapulae used as shovels (6), and a remarkable two-piece pick (12).

Outside Europe flint mines occur in North Africa and the United States. The methods employed in extracting the flint from the mines and quarries of ' Flint-Ridge ', Ohio, provide a striking example of determination overcoming natural difficulties.[4] When the flint was reached through the overlying soil it consisted of a seam four or five feet thick resting in or on limestone. This was gradually cut through by the continued application of fire and cold water until the underlying limestone was reached ; the exposed faces of the flint seam were then coated with clay for protection, and the underlying limestone burnt away without damaging the flint. The flint was then easily removed by the use of quartz or granite boulders of from 20 to 150 lbs. The raw material was traded as far as New York, Illinois, and eastern Virginia.

The mining skill displayed by the European flint-miners was often quite considerable. Having discovered a suitable seam of flint probably by means of an outcrop the miners sent their shafts ruthlessly through seams of inferior material to the proper level. Often, as at Spiennes (fig. 3), where they had to pass through recent, quaternary and tertiary deposits of a total depth in some cases of over thirty feet before the chalk

[4] W. K. Morehead, *Primitive Man in Ohio*, chap. IV.

FIG. 2. IMPLEMENTS OF ANTLER AND BONE FROM EUROPEAN FLINT MINES

1, Grimes Graves (after Sandars). 2 and 4, Spiennes (after Sandars). 3 and 8, Mur-de-Barrez (after Boule) 5, 6, 8, Harrow Hill (after Curwen). 9, Mesvin (after Sandars). 10, Grimes Graves (after Armstrong). 11, 12, Nointel (after Sandars)

was reached, a great deal of ' dead work ' had to be put in before the flint was obtained. In such cases extensive galleries radiating from the base of the shaft were often made when local conditions permitted. A good view of such a gallery showing the chalk roof-supports is given by the plate, p. 176. When, however, the flint seam came nearer to the surface it was obtained by sinking shallow open pits without galleries.

There has been much controversy, especially in this country, over the age of the flint mines, and their cultural connexions. In discussing these questions we shall be compelled owing to lack of space to confine ourselves to the British mines. The view that the flint mining industry as a whole was of Palaeolithic date has little support today, and need not be considered here. It should, however, be remembered that when the hypothesis was formulated little was known of our Neolithic cultures, and it is indeed in the light of the new evidence gained from the

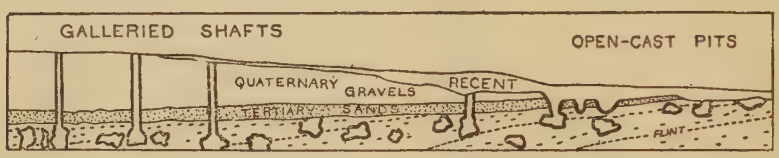

Fig. 3. SPIENNES SECTION (after Cornet, Briart and De Lehaye)

excavation of the Neolithic camps and from the correlation of Neolithic pottery-finds that we are able to re-examine the problem. Apart from the inherent unsoundness of comparing selected specimens from the debris of a mining and factory industry with the finished pieces of earlier times, there were always certain fully recognized difficulties to the acceptance of the theory. Not least important of these were the unequivocally late character of the faunal[5] and molluscan remains,[6] and the discovery by Canon Greenwell some four feet inside the gallery of a shaft at Grimes Graves of a ground basalt axe (fig. 4) signs of the use of which had been noted on the chalk walls.[7] It is, however, our

[5] Whereas no single species of exclusively Pleistocene age was obtained from Grimes Graves during the 1914 excavations such a recent species as the sheep was identified by Dr Andrews, F.R.S. *Report on excavations at Grimes Graves*, 1914, pp. 218–9.

[6] In their report on the mollusca found at Grimes Graves during the 1914 excavations Messrs Kennard and Woodward drily remark, p. 231 : ' It has been suggested that these excavations are of " Cave Age," *i.e.*, late Pleistocene, but the zone fossils of that period are well-known, and are all absent '.

[7] W. Greenwell, *J. Ethn. Soc. of London*, ser. 2, vol. II, 429; also A. L. Armstrong, *P.P.S.E.A.* V, 99.

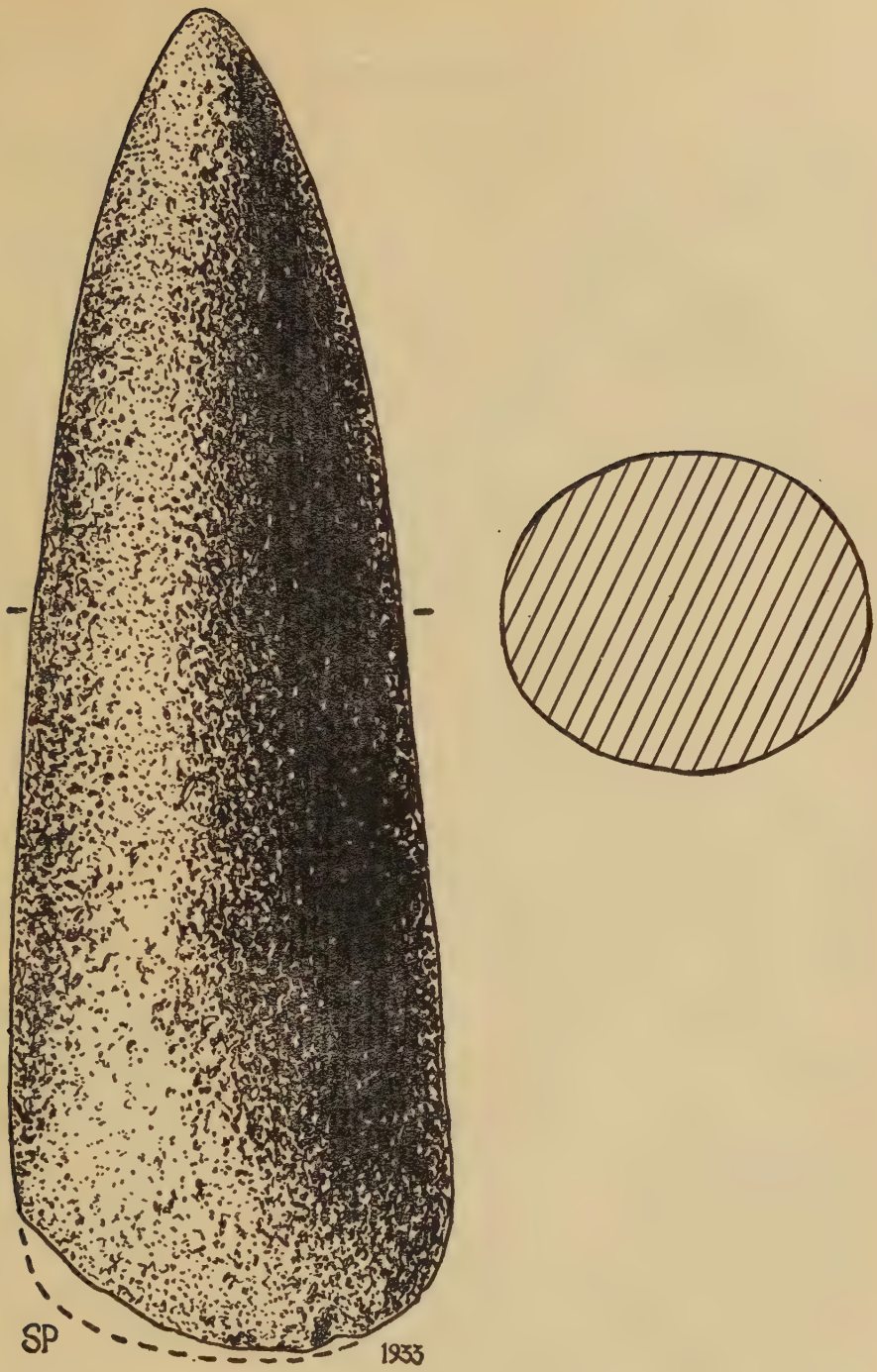

Fig. 4. BASALT AXE FROM GALLERY OF GREENWELL'S PIT, GRIMES GRAVES (¼)
(*British Museum*)

intention to pass these by and see what we can learn by applying our new knowledge of Neolithic cultures to the archaeological material from the English mines.

A type of carved chalk object, the so-called chalk cup or lamp, has frequently been found in English flint mines, Greenwell obtaining four from his shaft at Grimes Graves[8] (for one of these fig. 5, no. 3); another was obtained from pit 1 of the 1914 excavations at Grimes Graves[9] (4), and earlier Tindall had found one at Cissbury[10] (1). It is of great interest that the Neolithic camps and they alone have yielded precisely similar objects, three examples coming from the Neolithic occupation layer at the Trundle[11] (2, 5 and 7), one from Whitehawk Camp[12] (6) and two fragmentary examples from Windmill Hill (one, no. 12651, from cutting 1 c, layer 3 at 2·5′: the other from the same cutting in layer 1 at 0–1′,) to which we make reference by courtesy of Mr Alexander Keiller, F.S.A. The use of these objects is disputed, but their value as links between the galleried flint mines and the Neolithic camps cannot well be denied.

Of great value for dating purposes is the pottery yielded by the flint mines and this will be described in detail from each site:

1. Cissbury.—At a depth of 13 feet in the large pit Col. A. Lane-Fox discovered a few sherds of pottery; three are in the Pitt-Rivers Museum at Oxford, one in the British Museum. Of these four sherds three are small fragments of coarse ware, reddish buff in colour and averaging 1 cm. thick, with large flint grits in the paste. There is nothing very characteristic about these, but they compare well in texture with Neolithic pottery of the Windmill Hill class from the Trundle and elsewhere.

The remaining fragment[13] however is of first-class importance, and constitutes nearly one quarter of the upper part of a small bowl of a well known Windmill Hill type. As the restored drawing (fig. 6) shows, it is a wide-mouthed vessel 8½ inches (21.5 cms.) in diameter at the rim, which is slightly moulded, and the everted neck joins the lower part with a marked shoulder 2 inches (5.5 cms.) below the rim. The walls

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[8] W. Greenwell, *op. cit.* p. 430, and pl. xxx, fig. 2

[9] R. A. Smith, *Report, Excavations at Grimes Graves*, 1914, p. 211, and fig. 81.

[10] R. A. Smith, *Archaeologia*, lxiii, 121, and fig. 17.

[11] E. C. Curwen, *Sussex A.S.C.* lxx, pl. xvi, nos. 176–7; lxxii, pl. xiii, no. 37.

[12] R. P. R. Williamson, *Sussex A.S.C.* lxxi, pl. xvi, no. 1.

[13] At Oxford. It is inadequately illustrated in *J.R.A.I.* vol. v, pl. xviii, fig. 8.

Fig. 5. CHALK CUPS

1, (Cissbury after B.M.Guide). 2, 5, 7, Trundle (after Curwen). 3, 4, Grimes Graves (after Greenwell and 1914 Report). 6, Whitehawk (after Williamson)

1, 3, 4, British Museum; 2, 5, 7, Lewes Museum; 6, Brighton Museum

are thin and the ware very fine and hard with frequent small flint grits. The interior is black, the exterior pale brown, and both surfaces are well smoothed—in fact almost burnished.

The pot is an excellent example of a form of Windmill Hill ware—form G—which has a wide distribution in Britain and seems to belong to the second (A2) phase of the culture. Close parallels to both form and texture can be cited locally from Whitehawk Camp, Brighton,[14] and the type is well-known in northern England, being represented for

Fig. 6. BOWL OF WINDMILL HILL WARE, CISSBURY FLINT MINES
(*Pitt-Rivers Museum, Oxford*)

instance by the famous bowls from the Hanging Grimston long barrow, East Riding of Yorks.[15] The general type, although with less marked carination, occurs in the Michelsburg Neolithic culture of the continent, which appears to be parental or at all events closely allied to our Windmill Hill complex.[16]

[14] *Sussex A.S.C.* LXXI, p. 57ff, nos. 20, 21, 23, 30.

[15] J. R. Mortimer, *Forty Years' Researches*, pp. 102–5; and S. Piggott, *Arch. J.* LXXXVIII, 99.

[16] See *e.g.* bowls from Spiennes, V. G. Childe, *Arch. J.* LXXXVIII, pl. I, opp. p. 46.

2. Grimes Graves.—The interpretation of the numerous sherds found in the 1913 excavations of pits 1 and 2 is not easy. The twenty groups of pottery in the British Museum can however be divided into two classes on the criterion of paste and texture alone. The first (class I) comprises sherds of good, hard, well-baked wares, either greyish or pinkish-brown in colour with little flint grit. The second (class II) consists of fragments of soft, poorly baked chocolate brown ware, with fairly plentiful grit. Of these two classes of ware, class I occurs in both pits and is represented by seven groups ; class II occurs only in pit 2, where it predominates (13 groups).

Turning now to questions of forms, the rim types of class I are exclusively simple and slightly inbent, and in one instance (pit 1, 27 feet deep), a large sherd remains which shows the original form of a small vessel, $5\frac{3}{4}$ inches (14.5 cms.) diameter at the mouth and probably round based (fig. 7a). Fragments of flat bases of thin ware of class I occur however in both pits (fig. 7c). No decoration occurs on any class I sherds.

Of the class II ' chocolate ' ware, the sherds are generally speaking much more fragmentary than those of class I, but one fragment survives of an inbent rim similar to class I forms (pit 2, gallery 7). But the most remarkable vessel in this class is the shallow saucer, possibly a lamp, $6\frac{1}{2}$ inches (16.5 cms.) diameter, represented by fragments from pit 2, gallery 7 (fig. 7b), and decorated on the top of the rim and below with impressed cord ornament. Some small and very disintegrated ' crumbs ' may represent a second vessel with cord decoration only on the top of the rim (pit 2, layer 5). Another sherd (pit 2, gallery 5) shows the side of a pot just above its junction with a flat base.

These two pottery types imply a mixture of cultures. Both texture and form indicate that our class I belongs to the Windmill Hill group of Neolithic pottery, but the occurrence of cord decoration on class II places it in another category, as such ornament is completely unknown in Windmill Hill ware and suggests the group of British Neolithic pottery in which cord ornament is common—Peterborough ware. The West Kennet long barrow has, indeed, furnished an almost exact parallel to the cord-ornamented saucer.[17]

So far we have confined our attention to the galleried flint mines without considering any possibly earlier phase of mining. Whereas

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[17] Mrs Cunnington, *Pottery from the Long Barrow at West Kennet*, pl. I, no. 4.

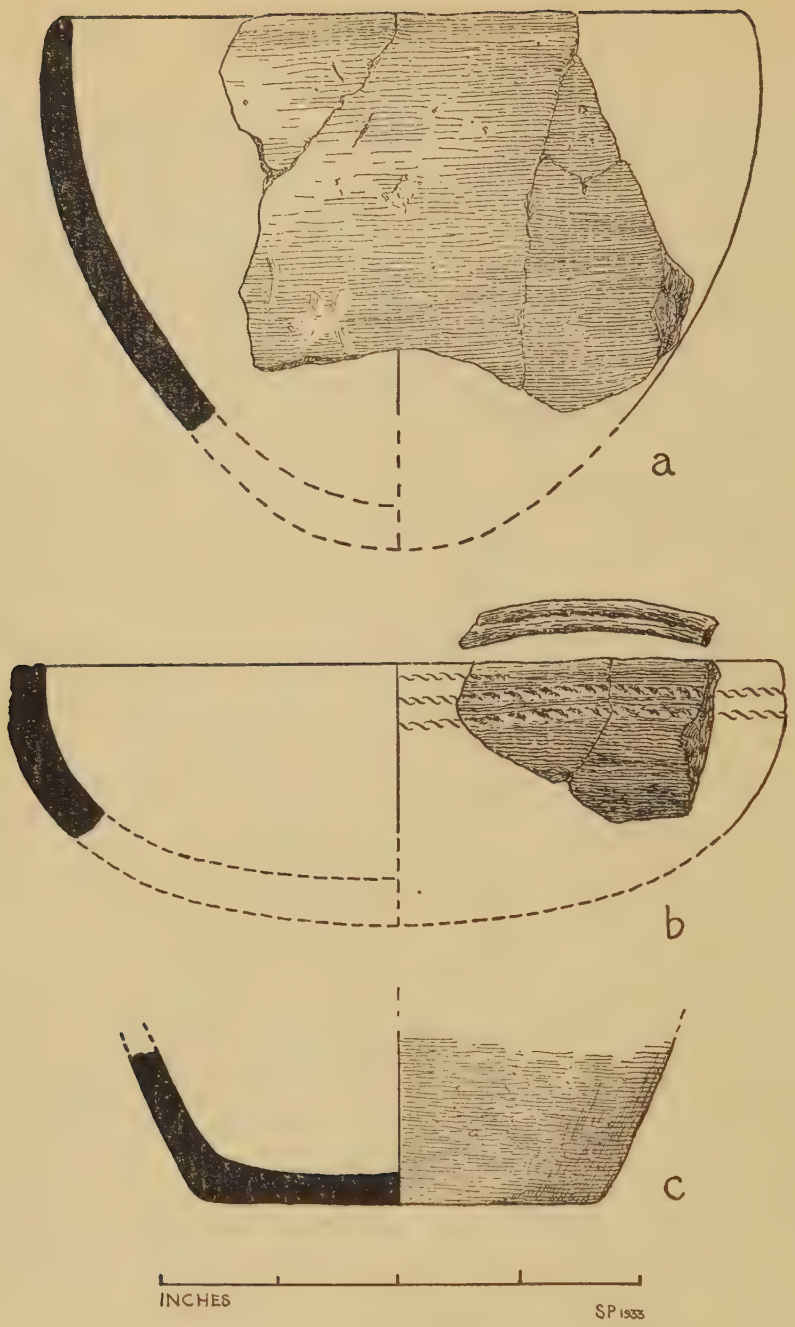

Fig. 7. POTTERY FROM GRIMES GRAVES, PITS 1 AND 2
(British Museum)

INTERIOR OF A GALLERY AT SPIENNES, SHOWING COLUMNS OF CHALK LEFT TO SUPPORT THE ROOF

A seam of flint is visible below the roof of the gallery

(By permission of Musées Royaux d'Art et d'Histoire Bruxelles)

facing p. 176

the hypothesis that the whole mining industry was of Palaeolithic age is now generally abandoned, the theory elaborated from researches at Grimes Graves that the industry continued from Palaeolithic into later times, passing through a number of phases, still has some adherents. The three main phases of mining which are alleged to have succeeded one another at Grimes Graves are connected with three types of mine :

(1) PRIMITIVE or bell-shaped pits, *e.g.*, pits 3 and 4.[18]

(2) INTERMEDIATE or ' masked ' pits with coves at base, *e.g.*, pits 8–12.[19]

(3) GALLERIED pits, *e.g.*, pits 1 and 2.[20]

An additional phase has to be pre-supposed to account for certain chipping floors, notably floor 85c, which is alleged to be earlier than any of the mining phases at present recognized.[21]

Fig. 8. RIM OF PETERBOROUGH WARE BOWL FROM PIT 12, GRIMES GRAVES

The Galleried Pits we have already shown to be of Neolithic date, and we shall now show from the evidence published by their discoverer that each of the ' earlier ' phases belong in reality to substantially the same period.

Thus :

(i) From a floor resting immediately on the chalk filling of the shaft of a typical Intermediate Pit (no. 12), a considerable amount of typical Peterborough ware with cord and ' bird-bone ' ornament has recently been excavated. We illustrate (fig. 8), a restored drawing from the sherd already published by its discoverer.[22] It is a rim fragment of a bowl decorated with whipped and twisted cord impressions.

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[18] A. L. Armstrong, *P.P.S.E.A.* IV, p. 113, and p. 182 ; V, p. 101.

[19] *Ibid.* V, p. 103 ; VII, p. 57.

[20] *Ibid.* V, p. 123. See also *Report on Excavations at Grimes Graves*, 1914.

[21] *Ibid.* III, p. 552. [22] *Ibid.* VII, pl. IV, fig. 3.

(ii) From a depth of eleven feet in the filling of a typical Primitive Pit we can show the fine chalk cup or lamp illustrated by fig. 9.[23] As mentioned earlier this type has been found frequently in galleried flint mines, in Neolithic camps, *and nowhere else.*

We have shown that all three mining ' phases ' represented by the different types of pit at Grimes Graves appear on the evidence of associated finds to be of Neolithic age. There are, however, certain chipping floors which have been claimed as earlier than any of the mining pits as yet found. Of these the most famous, owing to the

Fig. 9. CHALK CUP OR LAMP FROM PIT IV, GRIMES GRAVES ½ (after Armstrong)

engraving which it yielded and also to its stratigraphy, is floor 85. From 85c, the lowest of three floors, ' each sealed and separated by sterile layers of humus and closely compacted chalk rubble ',[24] ' several fragments of pottery forming portions of the base and side of a vase ' were obtained.[25] In the original report published in 1921 the discoverer told us that this pottery was ' identical with that discovered in the pits excavated in 1914 '.[26] With the emergence of the theory of mining phases extending from Palaeolithic to Neolithic times, however, this pottery faded into oblivion, until its evidential significance was pointed out by one of the present writers.[27] For the purpose of this paper we have re-examined the pottery, which consists of three small undecorated

[23] *Ibid.* IV, p. 122, and fig. 6. [24] *Ibid.* III, p. 548. [25] *Ibid.* III, p. 441.
[26] *Ibid.* III, p. 441. [27] J. G. D. Clark, *Mesolithic Age in Britain*, p. 112.

fragments, but we feel unable to commit ourselves either as to its age or its affinities.[28] The sherds certainly do not resemble in texture or any other respect those from pits 1 and 2. Apart from this somewhat unsatisfactory pottery, floor 85c yielded the best of the engravings or drawings on flint-crust and a number of flint implements. The browsing animal depicted has been regarded by L'abbé Breuil as a red deer,[29] while Burkitt and Kendrick have compared the technique of its execution with the Arctic art style.[30] On the other hand efforts have been made to compare it with the cave art, in which case the beast is identified as an elk.[31] As to the affinities of the associated flints it is interesting that whereas in 1921[32] their discoverer stated that 'the style of work and type of implement is distinctly Mousterian in character', by 1922[33] it had become 'distinctly Palaeolithic, Mousterian in tradition, but favouring a position about that of Abri Audi', while by 1926[34] it was merely of 'Upper Palaeolithic facies'. It would be possible to correlate this progressive rejuvenation with a dawning realization on the part of the discoverer of the glaring anachronism involved in the association of naturalistic art, of typologically quite an advanced character, with flints of 'recognized Mousterian types'! For our own part we are prepared to keep an open mind on the subject of a possibly earlier phase of mining at Grimes Graves,[35] but evidence of this quality does not convince us.

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[28] The sherds show no characters sufficient to date them conclusively, though Mr Christopher Hawkes, F.S.A., says they might quite well be Hallstatt. If this is so they must clearly be intrusive—in spite of the 'sealed' character of the deposit.

[29] A. L. Armstrong, *P.P.S.E.A.* III, p. 440.

[30] M. C. Burkitt, *Our Early Ancestors*, p. 174; T. D. Kendrick, *The Axe Age*, p. 164.

[31] A. L. Armstrong, *P.P.S.E.A.* III, pp. 439–40.

[32] *Ibid.* p. 438. 'The style of work and type of implement is *distinctly Mousterian* in character, large Levallois flakes and flake implements of Northfleet type predominating'.

[33] *Ibid.* p. 557. 'The general facies of the implements is distinctly Palaeolithic, Mousterian in tradition, but *favouring a position about that of Abri Audi*'. N.B.—It may be explained that Abri Audi shows a transition from Late Mousterian to Early Aurignacian, and is probably to be accounted for by the influence of the incoming upon the established culture.

[34] A. L. Armstrong, *P.P.S.E.A.* V, pp. 99–100. 'The presence on the lowest floor of Naturalistic drawings of animals, in association with finished artifacts of *Upper Palaeolithic facies*'.

[35] One of us has drawn attention to the Campignian traits to be seen in the flints of the mining industries (*The Mesolithic Age in Britain*, pp. 113–14). But this may have no more chronological significance than the well-known occurrence of Lower and Middle Palaeolithic forms. In any case we have no convincing evidence that any of our English mines were exploited before Windmill Hill times.

It might be observed that the floor yielded no exclusively Pleistocene fauna,[36] while there is no detailed record of mollusca, such as proved so damning in the 1914 Report.

The evidence for a sequence from Palaeolithic to Neolithic in the Grimes Graves mining has been shown to be valueless on its own

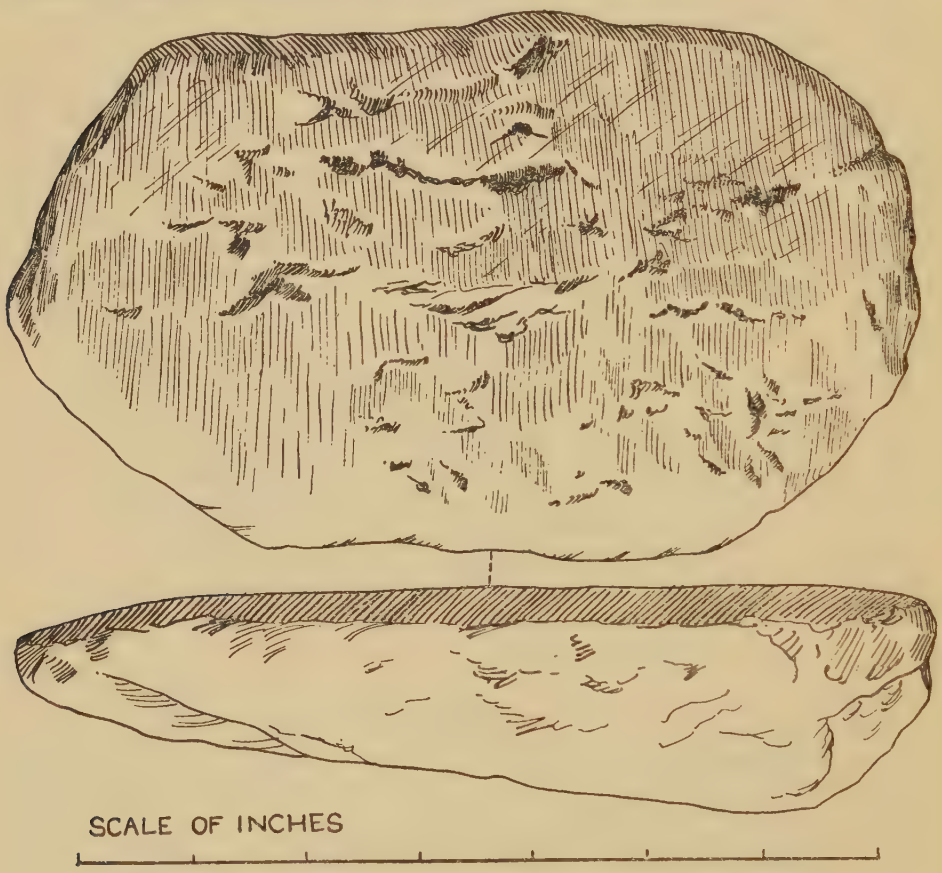

Fig. 10. TOP-STONE OF SADDLE QUERN, STOKE DOWN (after Wade)
(*Brighton Museum*)

ground. If we test out the pit-typology elsewhere we find it equally at fault. Thus according to definition there is no doubt that the Easton Down pits,[37] showing merely a belling at the base and no galleries,

[36] Only horse and red deer were obtained. *See P.P.S.E.A.* II, 557.

[37] Dr J. F. S. Stone, *Wilts. A.M.* XLV, p. 350ff.

should be considered as ' primitive '. Here three small abraded fragments of pottery identical with the Windmill Hill type sherds from the adjoining settlement were obtained from the shelly layer of pit 47.[38] In passing we may mention for the benefit of the typologist that a flint, described by Reid Moir as ' combining the attributes of a rostro-carinate and of an early hand-axe ',[39] was nevertheless obtained from floor 7 which overlay the shelly layer of pit 47. Or again the Stoke Down mines, none of which showed galleries, but which showed either coves at the base or no enlargement whatever and might in many cases have passed for pits of ' intermediate ' type, yielded at seven feet in the undisturbed filling of pit 2 the top-stone of a greensand saddle quern[40] (fig. 10).

The plain fact is that the different forms of pit reflect different conditions at least as much as differences in time. In any case we have shown that if there is a sequence at Grimes Graves it seems to have taken place in one cultural period. In flint mining, as in any other, two factors are predominant—safety in working and economy in the extraction of the raw material. The importance of the first is brought home to us by the fate of the wretched miner of Obourg whose skeleton was found crushed with an antler pick still grasped in the hand.[41] The chalk at this site was full of fissures and was weakened by the inclusion of sand pockets, and the workings were almost entirely of an open character for this reason. One of the few pieces of gallery-making seen at the site and designed to link up two open workings resulted in the fatality above mentioned. Geological reasons were also responsible for the ' primitive ' form of the pits at the French mines at La Petite-Garenne and Les Martins. It is interesting that at the former site workmen tried to extract flint for road-metal in 1895 by means of galleries ; the ' advanced ' method which they employed did not prevent them being killed by a fall.[42] The excavator of the Easton Down shafts, which as the reader will remember were of ' primitive ' character, is of opinion that the condition of the chalk inhibited the driving of galleries.[43]

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[38] Advance information from Dr Stone. See forthcoming *Wilts. A.M.*

[39] Letter from Reid Moir to J.G.D.C.; this will be quoted at length in Dr Stone's paper.

[40] Major Wade, *P.P.S.E.A.* IV, 84–6, and fig. 2.

[41] *Report on Excavations at Grimes Graves*, 1914, p. 24.

[42] A. Favraud, *Rev. anthropologique*, XXI, 130.

[43] Dr J. F. S. Stone, *Wilts. A.M.* XLV, 354.

But this factor of safety is not alone sufficient to explain the non-galleried workings. It may first of all be observed that these workings are notably shallow ; both at Easton Down, Stoke Down and at Grimes Graves along the slope of the valley to the north and west of the main mining area the coveted flint is to be found at a depth of no more than three or four metres. Now it should be clear that in such circumstances the driving of galleries would be less economic than the sinking of new shafts ; only in cases where a considerable amount of ' dead work ' was necessitated by the depth of the floorstone would extensive galleries become worth while. The famous Spiennes section illustrates this very clearly, galleried pits being sunk when the good flint was deep, and open pits where it was shallow. A feature of ungalleried shafts which should be of interest to the field-worker is the almost entire absence of surface indications often shown by them. This feature has been regarded at Grimes Graves as a criterion of age, but it exists equally at Stoke Down, the surface of which mine-field was described by its excavator as being ' as smooth as many croquet grounds '.[44] The connexion between marked surface indications and extensive underground workings, no less than the relative absence thereof in both cases, appears to be more a matter of common sense than of chronological significance.

In conclusion we may say that in our view all the evidence points to a Neolithic date for the main flint-mining activity in Britain,[45] no earlier phase having been satisfactorily demonstrated. Its inception seems indeed to be linked with the Windmill Hill culture, and perhaps the most interesting point clearly brought out by the pottery from Grimes Graves is the fusion of cultures—Windmill Hill and Peterborough—which we associate with the fact that the flint mines supplied a common need and were probably centres of trade. At Easton Down a similar mixture is being demonstrated in the large settlement which surrounds the mining area, with the additional fact that here the Beaker people, attracted as they were all over Europe to scenes of exploitation, settled on the site of the flint mines.

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[44] Major Wade, *P.P.S.E.A.* IV, 83–4.

[45] It is not without significance that in their report on mollusca from Whitehawk Neolithic camp (*Sussex A.S.C.* LXXI, 84–5), Messrs. A. S. Kennard and B. B. Woodward, who examined the Grimes Graves material from the 1914 excavations, state : ' The evidence thus obtained from Whitehawk Camp is in strict agreement with the facts furnished by Blackpatch, Harrow Hill and the Trundle (Sussex), Windmill Hill (Avebury, Wilts.), Grimes Graves (Norfolk) . . .'.

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*We are afraid we cannot recommend a recent publication on this important site (J. H. Pull, *Flint miners of Blackpatch*, Williams and Norgate, 1932). While we recognize that the suit must have yielded most valuable evidence it is presented so unscientifically that we cannot utilize it.

The Guilloche

by Allen W. Seaby

Professor of Art, Reading University

ANY child provided with his first pair of compasses essays a row of tangential circles: if he adds a second row touching the first and maybe a third row, he has constructed the geometric basis of the classical Guilloche. The term is sometimes used to cover not only circular bands but crossing ones as well, and interlaced ornament generally.

While the engravers of La Madeleine were working on their bones, and the women sewing skins together with their bone needles, in Egypt and Western Asia the decorative arts were being perfected. Fig. 1 is a sketch of a motive on the gold-foil covering of a flint knife from a grave of the predynastic period. In Elam this can be matched on a seal with a pair of lions, 'sejant rampant regardant', their tails intertwined (fig. 2). A non-representational treatment is seen on an early Sumerian votive plaque (fig. 3). Disregarding its symbolic content, the strictly geometric construction may be noted. This 'twist', as a single row of circular bands is termed here, occurs in Cretan art of the 16th century B.C., and later, in Assyrian art. It may be surmised that, with other motives, as the rosette, lotus and palmette (but not the fret), the twist was handed on to the Greeks from the East. It reached Scandinavia, where it is found on hanging bowls, and is seen inlaid in coral at the base of the Gaulish flagon in the British Museum. The lip of that vessel bears a very rare variety of the twist, an angular one.

The true guilloche, of more than one row of circles, appears early in Greek art. Among many examples of the single twist painted on the Rhodian pots, one comes upon an occasional example of a double row (fig. 4). In the triple-row form it occurs on the handles of proto-Corinthian vases (fig. 5), on the Daphnae ware and on early Etruscan sarcophagi. Search among archaic Greek buildings might discover it as carved or painted ornament. It does not appear, however, on any fragment of the earlier temple at Ephesus on view in the British Museum. Examples, finely carved, occur on the bases and capitals of the columns of the Erechtheion (fig. 6).

At this point it might be noted that in architectural manuals and other works aiming at a high standard of accuracy, drawings of the classical guilloche not seldom betray a strange misreading of the forms, the tangential circular bands being transformed by the copyist into a

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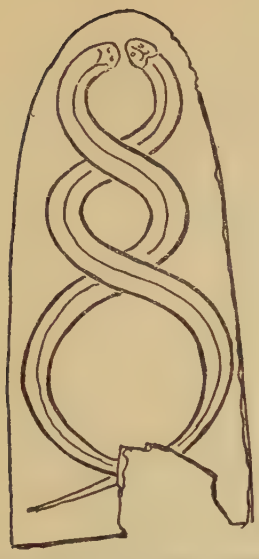
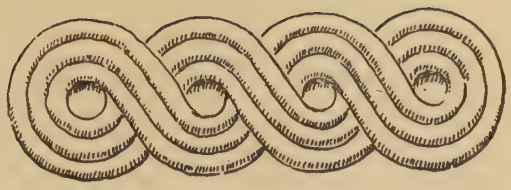


Snake-motive on the gold-foil covering of a knife-handle (predynastic)

3



From votive plaque (Sumerian)

2

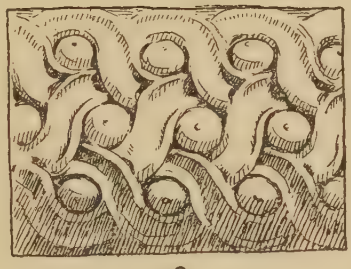
From seal (Susa II)

4

Painted ornament from Rhodian vase

5

Proto-Corinthian vase



6

From base of column of Erechtheion

7

From Rhodian vase

FIGS. 1–7

straight-lined plait ! As regards the Erechtheion guilloche, which has suffered much bad illustration, scrutiny of the originals in the British Museum shows how the error may have arisen, for the weathering of the moulding has caused the curved bands, at a first glance, to appear straight ; but if those parts less exposed are examined, it becomes clear that the bands were originally circular. The excuse cannot be made for errors in copies of *painted* ornament, and a triple-row guilloche of tangential circular bands on a proto-Corinthian pot, figured as a straight-lined plait in a journal devoted to Greek archaeology, has misled at least one writer on plaited design. There are two sources of error besides that mentioned above : (1) the misreading of the original by a copyist unversed in the archaeology of the subject, and (2) irregularity of form in the original, caused by the old-time craftsman's haste or lack of skill. On Greek pots, for instance, where the painter has, perforce, to work freehand, the circular bands of his guilloche tend to fall short of geometrical accuracy. The guilloche in figure 4 suggests a straight-lined plait, yet the painter was evidently familiar with the correct form although incompetent to reproduce it. Again, a first glance at fig. 7 might cause one to rejoice at finding the duplex, emblem of good omen, appearing so early ; the motive is plainly a guilloche of four circles, but owing to bad drawing it is on the way to the duplex of later times (fig. 8). One is reminded of the fret border on Greek pots. Even on the finest the ' keys ' are executed in a slovenly manner, being indeed difficult to draw with the brush. All this should lead to caution in accepting statements that plaited and knotted ornament appeared in quite early times, backed up by drawings the original source of which it is difficult to check. Judging by available examples, the writer ventures to affirm that no straight-lined plaited ornament appeared in Europe say before A.D. 100. It may, of course, seem strange that the plait should be slow in making its appearance among ornamental motives, for hair has doubtless been plaited since the days of the cave people. The fine bronze Zeus* (or Poseidon) recovered from the sea at Artemision in 1928, wears his long hair in a three-cord plait. However, it is much easier to plait than to draw the result freehand. It might be noted that the three-cord plait can be drawn with curves only, but if the plait is of four or more cords, or if, instead of a border the whole space is plaited, straight lines are necessarily predominant. The circular guilloche, too, may have its rows repeated to cover a

* ANTIQUITY, 1930, IV, 412, and plate facing 409.

8

From Roman mosaic

9

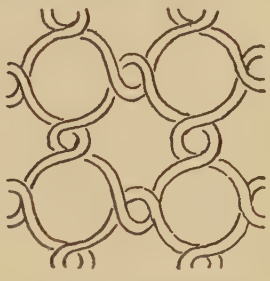
Three cord plait from Roman mosaic

11

Woodcarving from Oseberg ship

10

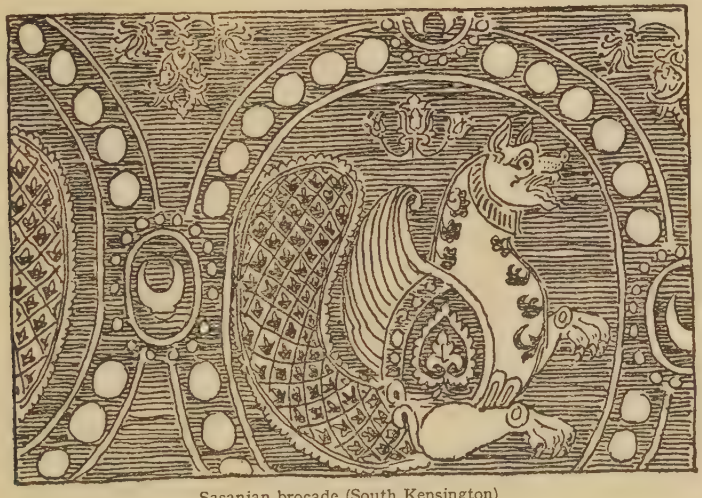
Part of a tapestry roundel from Akmîn



13

Planning of Byzantine silk

12



Sasanian brocade (South Kensington)

FIGS. 8–13

surface, as on some small plates of metal from Sparta, dated to the late 7th century B.C.

The appearance of the plait, as distinct from the guilloche, on Roman mosaics, coincided with some decay of classical tradition. The craftsmen among the hordes of Dacian and other slaves set to work on the pavements, cast a barbaric eye on the guilloche borders they were ordered to reproduce and in their fingers the circular bands changed into straight-lined plaits (fig. 9). This need not be considered as necessarily degeneration. To craftsmen used to basketry, plaiting of leather or rush mats, the change from curve to straight line may have been instinctive. The arrival of the plait is, however, only the first stage of the metamorphosis of the guilloche. When and where the ' breaks ' in the plait, which produced such delightful meanderings in illuminated manuscripts, silver work and stone carving, were first introduced is hard to settle. While Roman pavements were still being laid down, in Egypt the Christianized natives were producing designs which, at first sight, seem to solve the problem. The tapestry stuffs found in the tombs of Akmîn are patterned with tangential curves, obviously variations of the guilloche theme, but so ingeniously varied and the straps so consistently disposed ' over and under ' that the work seems to point directly to the interlaced ornament of the ' dark ages ' (fig. 10). However, there is a gap of several hundred years between them, and when the latter style appears it resembles much more closely the mosaic border plait.

Early Byzantine ornament made use of the guilloche, rather on Akmîn lines, consisting in circular bands running tangentially with other straight and curved ones, an arrangement curiously like Elizabethan strapwork many hundreds of years later. There are panels of such ornament let into the walls of the tiny Metropolitan or cathedral of Athens, as if they had come from a still older building. Sometimes the Byzantine treatment of the guilloche produced crosses composed of large and small circles. There is an example of this in ANTIQUITY, vol. VI, pl. VI (p. 288). The writers of the article in which it occurs speak of the ' looped motive ' (meaning the guilloche), being ' suggestive of Celtic ornament ', but, as has often been pointed out, ' looped ' or interlaced work is not the characteristic feature of Celtic art, which originated a thousand years earlier than the Teutonic interlace. The later, Christian, Celtic designers absorbed the plaits and other motives drifting through Europe, and they possessed a command of geometrical planning, never-failing ingenuity in making ' breaks ' and impeccable

accuracy, that made possible the impressive pages of ornament in the Durham Book, and the intricate elegance of the ' Tara ' brooch.

This inquiry commenced with the intertwining of snakes and lions' tails. During the ' dark ages ', alongside the pure interlaced ornament and occupying as much or more of the designers' energies, again appeared the interlacing of animal forms, although in a free rather than formal way. To find the origin of the animal in question one must search backwards through Visi-Gothic, Roman, Greek, Scythian, to arrive at ancient Asian art for the motive common to all—the lion. In the hands of the smiths of the Teutonic migrations, the lion motive lost its realism, even its body becoming a mere assemblage of writhing limbs and gaping jaws, forms equally useful in filling a space or making up a border. During the 7th century this disintegrated creature pulled itself together, the motive becoming a whole beast again, but a grotesque and impossible one—its head, limbs and tail twisted all ways, although the intertwining of its members was as consistent as the strands of the regular plait. We see this style at its most intricate in the Book of Kells and other illumination of the period. However, the most redoubtable school of animal interlacing was the Scandinavian. When the intertwined beast was abandoned by the rest of Europe for Christian emblems as vine scrolls and trees of life, in Scandinavia, still pagan, it was continued, and developed in complexity, until the animal almost disappeared in wayward interlacings. This, the Vendel style, was unknown to the rest of Europe. Some time before A.D. 800, another style appeared alongside the Vendel. It was strangely different in character, for instead of flat relief, the forms were deeply cut (fig. 11). In this ' gripping-beast ' style, the spaces, whether metal or wood, are continuously covered with gripping claws and strange mask-like faces, but the design is all the same under geometric control. It is not necessary to enter into the story of the figured silks, in which Sasanian, Byzantine and Chinese art are curiously involved (fig. 12). Specimens of Byzantine brocades, their fields partitioned by guilloches (fig. 13), the compartments filled with lion and other motives, must have reached the north and afforded a new stimulus to the carvers of the Vendel style. On the carved pole from the Oseberg ship, dated about A.D. 800, the maze of forms is steadied by the guilloche in repetition, its last appearance in European art until the Renaissance.

Several of the illustrations in this article are from the author's books on Greek and Roman Art and we are obliged to Messrs B. T. Batsford for lending some of their blocks for this purpose.—EDITOR.

Dolmens of North Caucasia

by A. M. Tallgren

Professor of Archaeology, University of Helsingfors

THE Caucasus is by no means a homogeneous region. It consists of a very high mountain-chain, the main parts of which reach to a height of over 5000 metres, with others of 1000–1600 metres. Forming an isthmus between two seas, the Asiatic Caspian and the Mediterranean Black Sea, it is open to both eastern and western influence. There is no distinct boundary between its northern part and the endless Eurasiatic grasslands, and in the south it is connected with the Armenian and Anatolian highlands. South of the mountain-chain the Caucasus has a Mediterranean climate : vines, rice and tea are cultivated and it is rich in metals. North of the mountain-range also the soil is very fertile, especially in the valley of the Kuban river. There, in the northeast corner of the Euxine, prehistoric culture flourished very early and reached a high level.[1] I shall here give an outline sketch of its character, and especially of the so-called Kuban culture of the Early Bronze Age, which takes its name from the Kuban river. This river flows into the Black Sea, but its upper course lies in the high mountains not far from the Elbruz. It has many tributaries, especially on the left, the Caucasian, side. Among these the Laba, the Belaya and the Abin may be mentioned.

In this part of the Caucasus monumental stone tombs or burial-chambers—the so-called dolmens—are met with in considerable numbers (about 1500). They have long been known in scientific literature and both Russian and foreign investigators who have dealt with Caucasian archaeology have given descriptions of them, but these are far from complete. Among the best known west-European works may be mentioned Chantre's *Recherches Anthropologiques*. Of Russian literature on the subject I may mention only the valuable series *Materials concerning Caucasian Archaeology* (=*MAK*), the 9th volume of which deals with the dolmens, but is chiefly of a topographical character.

[1] G.M.I. Rostovtzev, ' L'âge du cuivre dans le Caucase septentrional'. *Revue archéologique*, 1920.

FIG. 1. MAP SHOWING THE AREA OF THE DISTRIBUTION OF THE DOLMENS OF NORTH CAUCASIA

Real investigations are lacking, and in synthetic studies of megaliths in general the Caucasian dolmens are mostly passed over with a bare mention.[2]

The area of the distribution of the dolmens is not large (map, fig. 1). It occupies the basin of the western tributaries of the Kuban river between Mount Elbrus and the Black Sea. On the northern slopes of the Caucasus it is limited to the mountain proper, south of the steppes. On the coast of the Black Sea there are about a hundred large, well constructed dolmens. Southwards dolmens are met with in the northern Abkhazia, as far as Sukhum Kale, where they are less frequent. Their centre lies on the Belaya and the Laba in the east : they decrease in number towards the west, but the best examples are situated there, on the Black Sea coast.

The dolmens are stone cists ; the early ' chamber-dolmens ' and ' gallery-graves ' are not met with. These cists are built of well-squared heavy stone slabs which are placed on their edges and fitted together with admirable precision (figs. 2, 6, 7), a gigantic slab forming the capstone. The plan is either quadrangular or trapezoidal (fig. 2). The length of the monolithic wall is 2–3 m., the inside height about 1.5 to 1.6 m. The side-walls and the capstone project somewhat beyond the front and a kind of open passage is thus formed (cf. fig. 2, 4–5). In the front slab there generally occurs a circular (or oval, quadrangular) hole or opening like a window, 30–40 cm. in diameter. This port-hole was often closed by a stone disc or by a mushroom-shaped plug (fig. 7).

Dolmens of a somewhat different construction are also found, in which one or two walls are made of boulders or rough stone blocks, but with the exception of about 10, the main plan is uniform. The construction is, as a rule, remarkably good. The upper edges of the wall-slabs or uprights are sometimes rabbited or grooved to take the covering slab. Everything in the design goes to prove that these dolmens represent a highly developed cultural and architectural phenomenon.

A small class of these dolmens may be mentioned separately. An immense mass of stone, shaped into a long quadrangular block, was hollowed out to form a monolithic box, the lid being one with the sides, the only access to the interior being through a window (fig. 2: 1–2).

[2] A more detailed description of the Caucasian dolmens will be published in the 9th volume of the *Eurasia Septentrionalis Antiqua* (=*ESA*) in Helsinki-Helsingfors.

In other cases the lid is separate, the bottom and sides being cut out of one block, as in an ordinary sarcophagus (fig. 2: 3–4). The accuracy

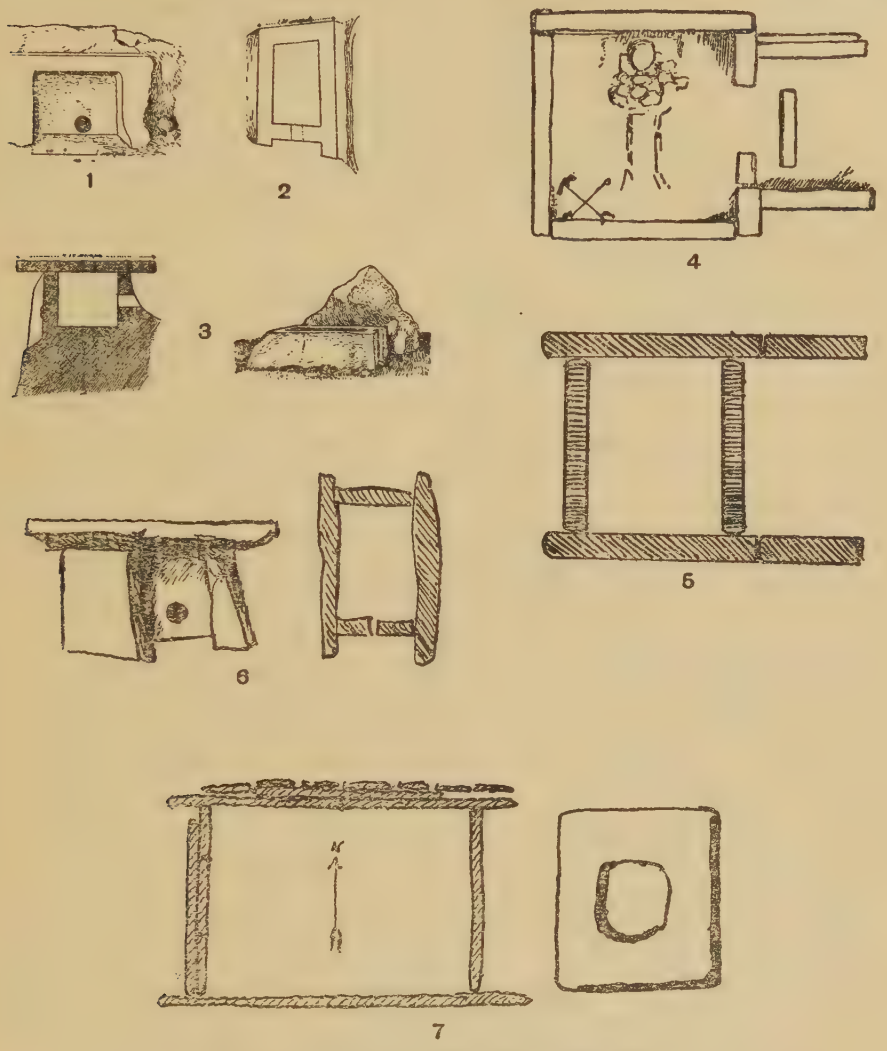


FIG. 2. PLANS AND ELEVATIONS OF DOLMENS
1–4, Eastern Black Sea coast (after Spitsyn). 5, Tsarevskaya, North Caucasus.
6, Rajunkoloor, India (after Montelius). 7, Allstedt, Saxe-Weimar (after Montelius)

with which the ordinary built-up dolmens are fitted together is so perfect that it is not always easy at first glance to detect any difference between

the cut-out dolmens and those made of five separate dressed slabs. The whole class of dolmens in the western Caucasus is constant and there was certainly no interval of time between the different types which occur. It is not a long evolution, only a difference in skill and accuracy, that is reflected in the various examples of these monuments.

The dolmens often occur in groups of from 200 to 500, but of course there are also more isolated dolmens. They stand, as a rule, on a natural mound or in a burial kurgan, the walls either partly or entirely sunk in the earth (fig. 2). Some are surrounded by a stone circle. As to their orientation, they are generally placed with the ' window ' towards the east.

There are engraved ornaments[3] on the stone-slabs of about ten of the dolmens. These are situated on the shore of the Black Sea in the extreme western corner of the mountain chain. The designs occur either on the inner walls of the burial-chamber (in two cases) or on the prolonged walls of the open passage, or on the front-edge of the covering slab. Further, cup-shaped hollows are sometimes met with on the capstone. The designs on the walls of the burial-chamber consist of an engraved zig-zag line along either the upper (fig. 3 : 3) or the lower (fig. 3 : 2) borders of the inner walls, forming a straight row, and of hanging bunches of wavy lines (fig. 3 : 3), somewhat resembling carpets or a canopy with which they have been associated. Traces of red colouring matter occur.

The designs in the passage of one of the dolmens (fig. 3 : 1–2, 4) are more complicated. There is a line of triangles with hanging wave-lines, and above can be seen what may be a drawing of the sun. It is possible that the figures here are not merely ornamental in purpose but are intended to depict a landscape with high mountains and flowing rivers —the Abin and its affluents. I shall return to this point later. It may be remarked, that on the head of the stone-plug (from this same dolmen ?) is an engraved circle.

Although there are about 1500 dolmens in Caucasia, only a part of them have yielded finds. Owing to their monumental form the dolmens have at different times been despoiled of their contents. Many are partly filled with earth and stones but it is difficult to say whether this was a primary custom or whether it is due to later damage.

As a rule the burials were made in a sitting posture (fig. 2 : 4), although cases of recumbent skeletons, some in a contracted position,

[3] A. Leshchenko, ' Materials concerning the decorations on the Northwest Caucasian dolmens '. *Anthropologia*, IV, 237ff. Kiev, 1930. (In the Ukraine language).

are frequent. Single burials are rare; three to four individuals buried in a dolmen seems to be the rule, and communal burial is also known. Not only human, but also animal bones are to be found, especially

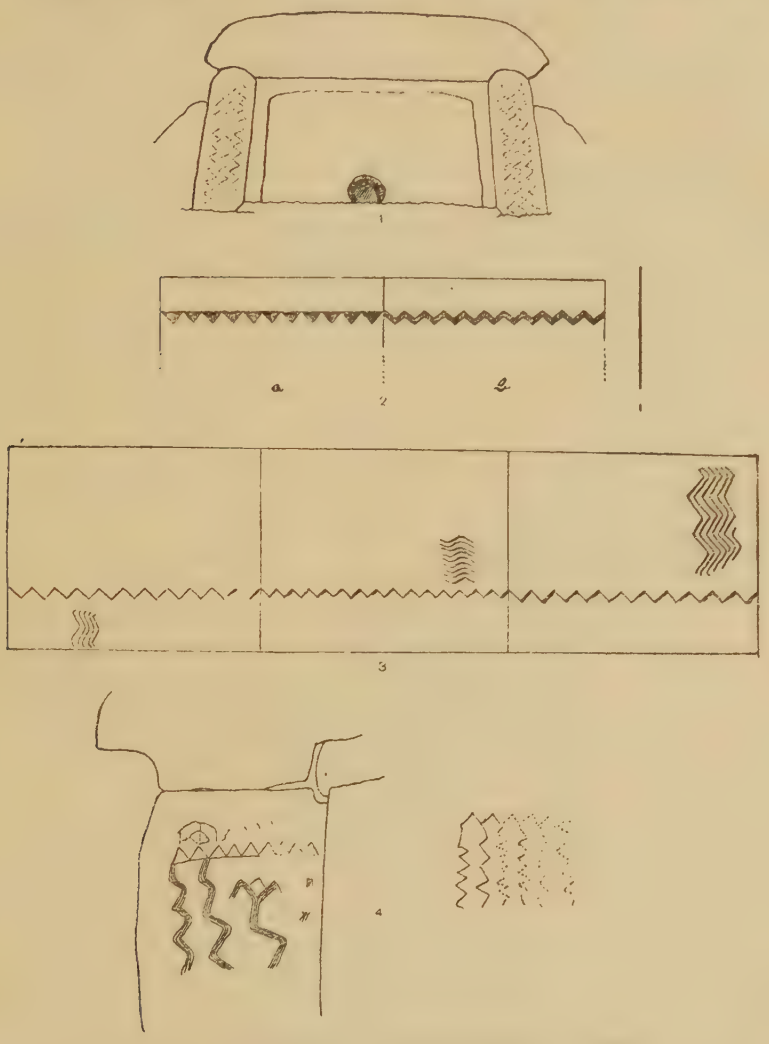


FIG. 3 (1-4). EXAMPLES OF DESIGNS IN THE DOLMENS

those of domesticated animals, such as sheep and horses. Cattle-keeping was certainly quite common, and we are here dealing with a people who were nomad cattle-keepers. Pottery and pot-sherds have

been found with the burials and those reproduced are decorated with geometrical patterns of the Early Bronze Age and are never painted. Bronze tools, such as awls, chisels, gouges, daggers and rings are also present. Stone weapons are lacking. Only flint flakes, scrapers and arrow-heads serve as evidence to prove that this culture is not far removed from a period when stone prevailed. But, as shown by some remarkable and rich burial finds—as well in the Kuban as in Abkhazia—the culture of the Caucasian dolmens is a real Bronze Age culture. Metal was in common use for implements and tools.

The following particulars show the contents of some of the richest megaliths known, including one incompletely investigated dolmen in Eshery, near Sukhum Kale in Abkhazia, where there is a group of 13 very large dolmens.[4] In one of these there were about 30–40 interments, and another, not completely examined, had at least four skeletons. Besides two bronze axes, a hook, and daggers, there were a polishing stone and pots ; the latter were small and poorly ornamented. I am very much indebted to the Editor of ANTIQUITY, who visited the museum of Sukhum Kale last summer and made a sketch of one of the pots, the only one existing in the museum. He has kindly placed his sketch at my disposal (fig. 4).

The Tsarevskaya dolmens[5] have often been described in English publications and I can therefore pass them over briefly. There are two large burial-mounds containing many graves, and in each there was a stone dolmen, made with extreme accuracy. Each dolmen was divided into two compartments, separated by a quadrangular slab, furnished with an opening which was covered by a stone disc. Only the larger of the two compartments contained a skeleton, in a contracted position, covered with red ochre, as were the walls of the chambers. In the smaller compartments were pottery and tools.

The rich contents of one of the Tsarevskaya dolmens is to be seen in fig. 9. In it were found ornaments, pins, beads and rings of gold and silver (fig. 9 : 1–2), as well as a quantity of bronze implements (fig. 9 : 3–6), chisels, gouges, axes, spearheads and daggers. There was also a large number of pots, mostly globular in shape (fig. 9 : 8), and decorated with geometric patterns. Flint arrow-heads and a polishing stone were the only stone implements (fig. 9 : 7, 10).

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[4] M. Ivashchenko, ' Beiträge zur Vorgeschichte Abchasiens '. *ESA*, VII, 1932.

[5] *Ochót of the Imp. Archaeological Commission* (=Ochót) 1898, p. 33ff, and pls. I–VI. V. Gordon Childe, *The Dawn of European civilization*, p. 140.

Most of the Caucasian dolmens are homogeneous in time and culture. They have counterparts in cultural remains known from barrows in the Kuban region, which, with the dolmen finds, constitute a cultural group of a distinct character, viz. the Kuban Early Bronze Age civilization, which is very rich in objects of oriental type. It is the earliest developed culture known in the Caucasus and I shall endeavour to determine its general features.

Fig. 4. POT FROM THE ESHERY DOLMEN, NEAR SUKHUM KALE, ABKHAZIA $\frac{2}{3}$

The treasure-find of Staromyshastovskaya, which some peasants dug up by chance in 1897, consisted of a small silver bowl with a lid. In the bowl were about 2500 gold and silver beads and 400 carnelian and glass beads, probably belonging to collars and ear-rings, about 80 gold rings, often joined to each other, and some other ornaments of precious metal. Among them there was a pendant in the form of a lion's head, a massive pierced silver figure of a goat, and a gold diadem, which had been ornamented with gold rosettes, but only one of them

remains. All these objects and ornaments are oriental in origin, without analogies in Europe outside the Kuban. I consider Elam or Asia Minor to be their country of origin.

Close parallels to most of the ornaments of the Staromyshastovskaya find are known from the famous Maykop barrow, opened in 1897.[6] This kurgan was 10 m. in height and about 200 m. in circumference, and contained several tombs, and two shaft-graves. The larger of them, a pit 5.5 by 3.75 m. in length and 1½ m. in depth was constructed of wood, divided into three compartments. The floor was paved with boulders. In the largest compartment there was a skeleton in a contracted position, evidently a prince or important man. In each of the smaller compartments there was a woman buried, the man's wife or servant. In the larger chamber were found, among other things, the four silver and gold posts which had supported a canopy, each with golden finials in the shape of a bull or lion, of the same kind as the goat of Staromyshastovskaya, the signification of which is thus elucidated. There were 135 gold figures of lions and bulls, and rings of the same shape as those in Staromyshastovskaya, used as frontal ornaments of the canopy. A gold diadem with rosettes and thousands of gold, turquoise, carnelian and silver beads and rings were also found. Most interesting are the 17 vessels of stone, gold and silver, or their alloys. Some of them are exactly like the bowl of Staromyshastovskaya. Two of the vessels are decorated with engraved figures of mountains, streams, animals (fig. 5). The late Prof. Farmakovsky, a distinguished Russian archaeologist, has interpreted these ornaments as representing a landscape or a map of the king's realm showing Caucasian mountain-tops.[7] The whole of this jewellery of Maykop must, no doubt, be connected with the ancient Orient. I imagine that at this time there was in Kuban an empire of nomad warriors, who had oriental craftsmen and artists in their service, and who were cattle-keepers and perhaps agriculturists.

In the principal Maykop barrow there were also tools and weapons of copper or bronze : axes, gouges, daggers, arrow-heads of flint, a polishing stone, a ' boomerang ' of stone and over a dozen clay-pots, partly decorated with geometric patterns.

It is a fact of great importance that exactly the same kind of tools and pottery were found in the two Tsarevskaya dolmens. Though articles of gold and silver were found in these dolmens they did not

[6] *Ochót*, 1897, p. 2ff ; Rostovtzev, *op cit.* note 1.

[7] Materials concerning Russian Archaeology (=*MAR*) 34. Petrograd, 1914.

contain so much as those at Maykop. At Maykop there was a burial-chamber of wood, of the same construction as the stone-houses in the Tsarevskaya kurgans, showing that both belong to one time and one culture.

The main aspect of the culture now under discussion is Oriental. This applies to the metals and the objects made from them (fig. 9) and to the emblems of royalty and divinity met with at Maykop (fig. 5).

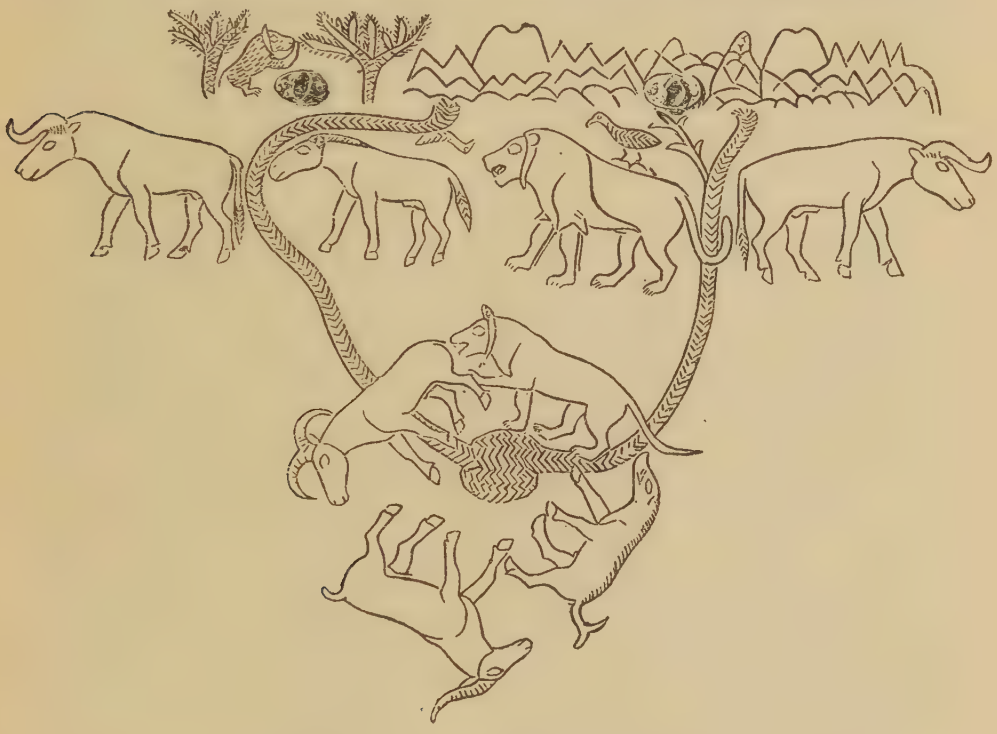

Fig 5. DESIGN ON A VASE FROM MAYKOP (after Farmakovsky)

I may remark also that the forms of most of the copper-tools show a similar affinity to the Asiatic tools found in Syrian graves.[8] such as tongued spears, quadrangular chisels, long oval ' beads ', and pins with a bent head. Only the pottery in Kuban is different from that of Asia Minor.

[8] *Liverpool Annals of Archaeology*, VI, pls. 19, 21, 24, 25 ; VII, pl. 22. Analogies also from north Persia. Cf. *Supplement to the Bull. of American Instit. for Persian Art and Archaeology*, vol. II.

The Caucasian dolmens were formerly regarded as an offshoot of the latest group of western megaliths, *i.e.* of the late Neolithic cists. I am of the opinion that as regards their origin in the Caucasus they are an Asiatic and not European type. Stone graves—shaft-graves cut in the rock in the form of artificial caves—are common in the ancient East and in the Mediterranean. Close parallels even to the Caucasian cist-dolmens are known in western Sicily, in Transjordania and in India (fig. 2 : 6). The west-European analogies are much ruder in shape and execution.

Taking into consideration all the above facts I am convinced that the culture of the Kuban Early Bronze Age is primarily an oriental one, or at any rate orientalized to such a degree that Asiatic elements prevail. I think that here we have to do with the origins of one of the cultures known in Asia Minor in the second millennium B.C.

In recent years students of early eastern civilizations have furnished us with new and important historical facts, which also partly concern the Caucasus. Prof. Hrozny, the distinguished Czech philologist, has published his investigations[9] and we learn from him that among the powerful peoples of Asia Minor mentioned in the deciphered Hittite inscriptions of Boghazkeui there are at least three that arrived in Asia from or *viâ* the Caucasus. The first of them, the Asianic Khatti, penetrated into Anatolia in the fourth millennium B.C. They possessed a culture which played a role in the later Indo-European Hittite empire. The second Caucasian immigration wave brought the Hurri (the 'Cassites') into east Anatolia about 2000 B.C. They founded the Khaldish Urartu empire (not of course Chaldean) and in addition ruled over large parts of northern Syria. The third immigrants were the Mitanni, who conquered the Hurri empire and formed the leading power in eastern Asia Minor about 1600 B.C. They formed an aristocratic element in the Hurri-Mitanni empire and spoke an Indo-European language which was nearly allied to Sanskrit, and was perhaps identical with it. They worshipped the same gods as did the Aryans in India, *viz.* Varuna, Indra, Mitra.

The evidence of antiquities alone enables the archaeologist to determine only cultural, and not ethnographical areas. But if furnished on the historical side with facts and dates, he is justified in trying to equate historical events with his cultural groups which he has established by means of his own material (and whose chronology is firmly

[9] B. Hrozny, 'Histoire et progrès du déchiffrement des textes'. *Archiv. Orientálny* 1931, p. 272ff.

PLATE I

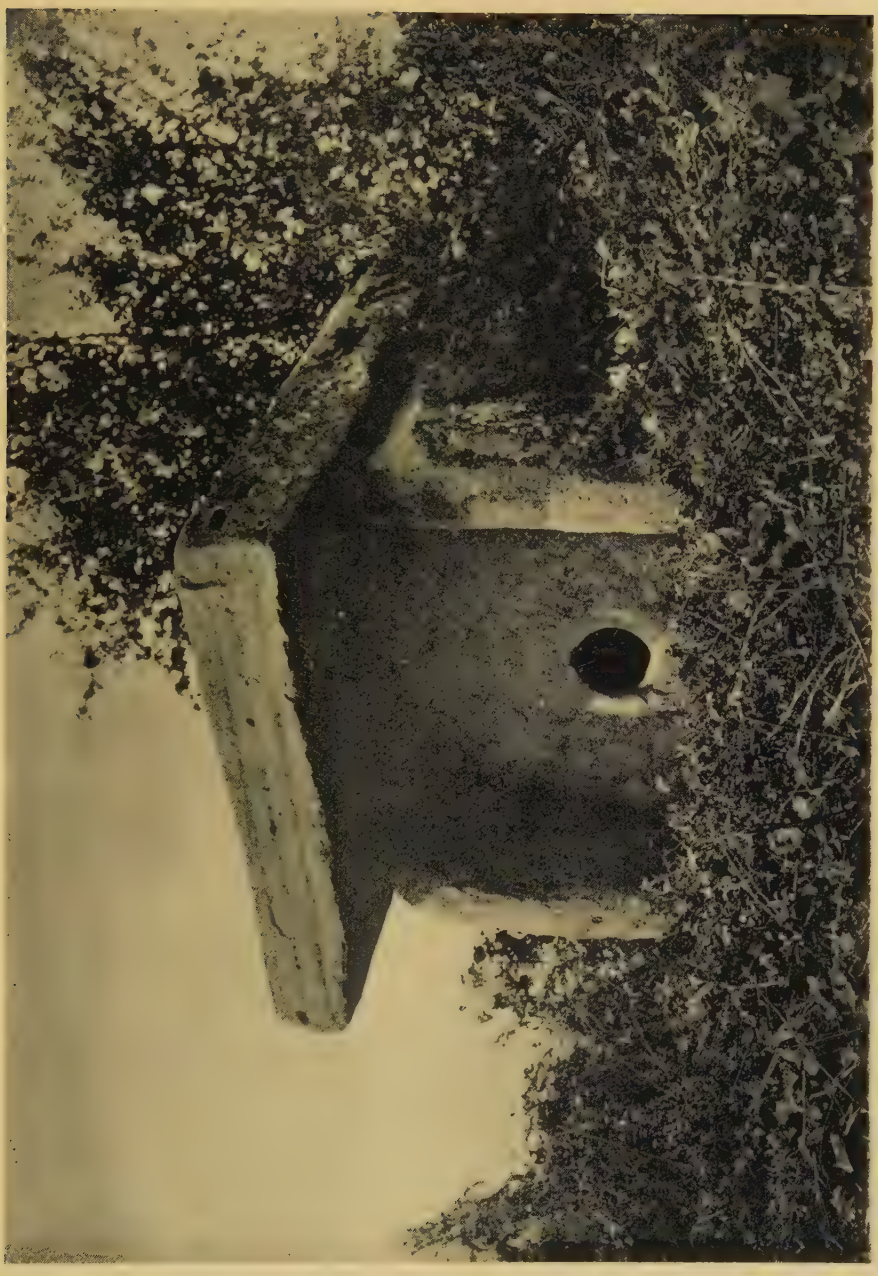

Fig. 6. DOLMEN NEAR GELENDZHIK
(Figs. 6–8 from *M.A.K.*)

facing p. 200

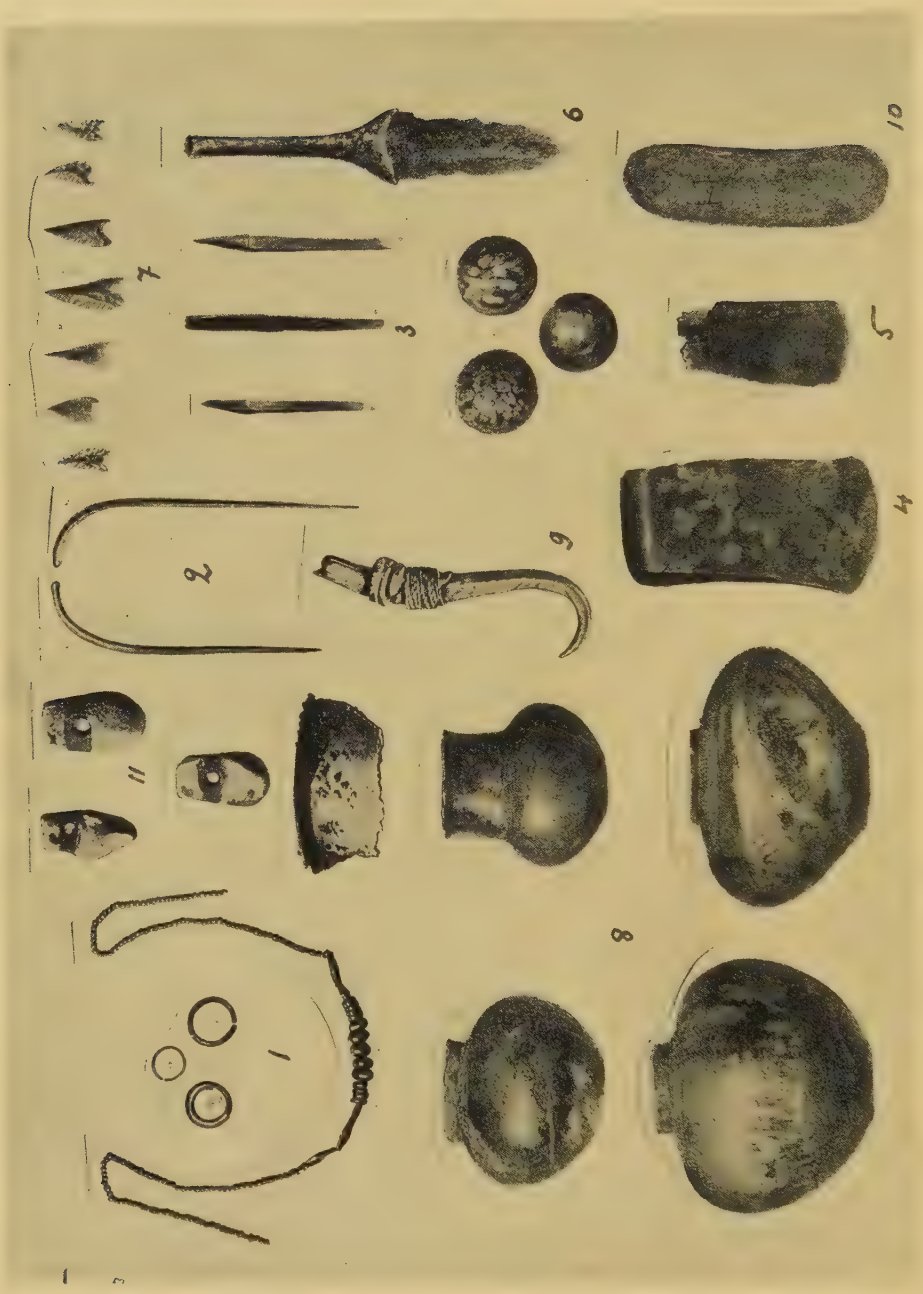

FIG. 9. JEWELRY, TOOLS, ARROW-HEADS, POTTERY AND BONE BEADS FROM TSAREVSKAYA

established). In this particular case he has to determine whether there is in the Caucasus a civilization with which *e.g.*, the name of the Hurri or the Mitanni peoples can be associated. I think there is. The culture of the west-Caucasian dolmens of the first period of the second millennium B.C. is this civilization.

The Kuban culture is not a purely Oriental culture. It is related to the late Neolithic cultures of its northern periphery in Russia and Central Europe. This is especially true of the ornamented clay pots, found in Maykop, Tsarevskaya and other Caucasian tombs. I know of no analogies to this pottery in Asia. Some of the bronze weapons are likewise without any counterpart in the ancient East. The pots have near relatives in Central Russia and in Germany among the local industries, *viz.*, in the so-called Fatyanovo and Thuringian cultures.[10] Those are Stone Age cultures, but do not belong to the latest local Stone Age groups of the corresponding countries. Thus a chronological classification or, let us say, a cultural level, is obtained : on the one hand, the Kuban Early Bronze Age, on the other the Thuringian Neolithic pottery and the stone battle-axes of the Fatyanovo period are contemporary. They coincide in time with the older megalithic passage-graves in Denmark and Great Britain. Their exact date is about 2000 B.C. or somewhat later. The so-called dagger period—the latest Scandinavian Stone Age—is later. The very end of the local Stone Age—the period of the stone cists—must, in any case in Scandinavia, be dated a few centuries later than the Early Bronze Age of the dolmens in the Kuban.

I have ventured to express the opinion[11] that in the Kuban Early Bronze Age, migrations are reflected which brought Central European nomads to the Kuban region. There, in this fertile area, they may, I suppose, have adopted relatively early an eastern civilization, in the same manner as Teutonic tribes did about 2000 years later on the frontier of the Roman Empire, where they quickly became Romanized. My opinion is, of course, only a theory and cannot be stated with certainty. Different opinions have been expressed. The question will be determined only when further excavations in the Caucasus and in Asia Minor have given us new information concerning the history of the industry.

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[10] *Finskt Museum*, 1924, p. 1ff. ' Europaeus-Äyräpää ' in *ESA*, VIII, 1932.

[11] ' L'âge du cuivre dans la Russie centrale'. *Suomen Muinaimuisto yhdistyksen Aikakauskirja*, XXXII. Helsingfors, 1918.

The Hurri are a Caucasian, not an Indo-European people. The Kuban culture now discussed is closely connected with Europe. The people who created it, are, I suggest, an Indo-European aristocracy. In this case I am inclined to think of the Mittani, the Indians among the local Hurri people, who appear in Hither Asia about 1600 B.C. This date may be taken as the end of the Early Bronze Age on the Kuban.

We have found that the Kuban dolmens are contemporary, not with Scandinavian stone cists, which are somewhat of the same shape as the Caucasian ones, but with the passage-graves. The cultural stage of the Scandinavian and west-European passage-graves was lower than that of the Caucasian dolmens. The Caucasian dolmens are also much more developed in construction and precision than the contemporary megaliths of Western Europe. If, as I believe, the Caucasian dolmens really represent an oriental type of grave, developed and existing there at a very early period, then I think they must have influenced the northern cultures of Central Europe, which kept up connexions with Scandinavia and led to imitations in wood and stone. So the ' window ' cists in Saxony and Hesse, which are quite exceptional in Germany, seem really to be early in origin,[12] and contemporary with the Caucasian dolmens and influenced by them, while most of the northern cists are much later. The megalithic people in Scandinavia adopted the new form of tomb : it became quite common in Scandinavia at the very end of the Stone Age. I do not believe in an internal evolution of the Scandinavian megaliths, according to which the passage-graves would have developed into stone cists. The last mentioned are newcomers from the East, chiefly by the land route from the Caucasus, partly perhaps also by sea from the Mediterranean, and they were adopted and imitated in Europe. Analogies to this phenomenon can be found in historical periods. The first Caucasian high culture is, I submit, contemporary with the zenith of the early Cretan cultures, so brilliantly discovered and studied by English scholars.

[12] Ebert, *Reallexikon* : Göhlitz, Helmsdorf, Züschen.

The Abbots Bromley Horn Dance

by Violet Alford

FEW people know of this, possibly the most primitive dance in Europe. We find scanty records therefore, the earliest dating only from the 17th century. Robert Plot, in his *Natural History of Staffordshire*, 1686, p. 434, says :—

> At Abbots, or now rather Pagets Bromley, they had also within memory, a sort of sport, which they celebrated at Christmas (on New-Year and Twelft-day) call'd the Hobby-horse dance, from a person that carryed the image of a horse between his leggs, made of thin boards, and in his hand a bow and arrow, which passing through a hole in the bow, and stopping upon a sholder it had in it, he made a snapping noise as he drew it to and fro, keeping time with the Musick: with this Man danced 6 others, carrying on their shoulders as many Rain deers heads, 3 of them painted white, and 3 red, with the Armes of the cheif families (*viz.* of Paget, Bagot, and Wells) to whom the revenews of the Town cheifly belonged, depicted on the palms of them, with which they danced the Hays, and other Country dances. To this Hobby-horse dance there also belong'd a pot, which was kept by turnes, by 4 or 5 of the cheif of the Town, whom they call'd Reeves, who provided Cakes and Ale to put in this pot; all people who had any kindness for the good intent of the Institution of the sport, giving pence a piece for themselves and families; and so forraigners too, that came to see it: with which Mony (the charge of the Cakes and Ale being defrayed) they not only repaired their Church but kept their poore too: which charges are not now perhaps so cheerfully boarn.

Why Plot says ' within memory ' it is difficult to understand, unless there was a temporary cessation of the rite. He might easily have learnt whether the sport still lived or no, but from this and various internal points I suspect the Doctor never went to see for himself. Like too great a number of folklorists he preferred keeping his nose in a book to embarking on ' field work '. The pot into which they put the feast has now disappeared, and so far from repairing the church and keeping the poor, the few shillings gained hardly pay the dancers for the loss of a day's work.

Brand, in his *Observations on Popular Antiquities* (1813) repeats this, quoting from Plot, and another eighty years went by before T. F. Ordish, in *Folk-Lore*, 1893, IV, 172–4 mentions the dance. Other notices have appeared in *Folk-Lore*, one (1896, VII, 382–4, pls. IV–VII) giving photographs of the horns, the horse's head and the bow; another suggests that it is a magic dance to call the deer within range. In

Sword Dances of Northern England Cecil Sharp includes the Horn Dance, which is in a category by itself, and gives instructions for dancing the figures, and in the accompanying book of music is the plaintively monotonous, beautiful tune now nearly forgotten in its native village. Miss Evelyn Sharp, in her *Here we go Round* touches upon it, but seems ignorant of the fact that it was once a Winter solstice feast. Except for remarks in a local guide book these few references make up the written history of one of England's mysteries.

Warm and cloudy weather for the wakes. The feast is held during the week following 4 September, which is the day of the local fair. Very unpretentious are the entertainments—a cricket match, a travelling show, swings and a roundabout. But on the Monday nobody goesto work, every man is in his best clothes. A deserted street, the inns already full, perfect quiet outwardly, inwardly a somewhat mysterious excitement. ' Where are the Horn Dancers ' ? you ask anxiously. The quiet seems too profound. They cannot be dancing this year. ' Mrs Bentley ! Are the dancers out ' ? calls a powerful-voiced young woman. And from further down the street comes a faint echo ' They're out '.

That is rightly said. That is what you were subconsciously waiting for. Out. In high Vallespir the bear is ' out ' on a Candlemas morning. In a valley of Navarre the Hobby horse is *salido*. Under the highest Basque mountain the Spring masqueraders, all mirrors and feathers, and reds and yellows and blues, are *sortis* with their Hobby horse too, and their petticoated man–woman. You hurry to the church, but it is already too late. The vicar is on his way back from seeing them off, which benediction is given about 10 o'clock in the morning. ' They're out ', he says, but you enter all the same, and in the north transept you find the six stout wooden brackets on which, the year round, the horns hang in the care of the church. You start in pursuit, the way taking you past ancient limes whose limbs rest on the grass, under ' great dotard oaks ', far into the vert of Bagot Park.

What are those dim creatures moving so gently, so furtively, down there in the deepest shade ? Your breath jerks, you have an eye for the nearest stile. A herd of brightly coloured deer is coming softly up the lane. Red flutters and a tinge of green. What light there is is catching tossing points ; slides along great spreading branches. It is a herd of deer, but not our light fallow deer. Enormous heads these, they seem to fill the lane between the hedges, great spreading heads—reindeer. Reindeer, here in the English Midlands. The faint buzz

of an accordion brings back wandering wits, and a farm lad from the other side of the stile calls out, ' Here they are '.

The reindeer herd shrinks to six men-deer, one man-horse, a tall, man-woman with a gentle rustic face, a jester-like Fool, a little hunter boy with bow and arrow, and two musicians, one of whom is a dancer as well. This queer company is quite silent, and after their long morning's work, not a little weary. They turn into a farm-track, immediately and without a word range themselves in a single file, and to the buzz of the accordion begin to trace a wide circle round the barton. The line melts into a serpentine line, the leader turns inwards and passes between the second and third dancers, so that the whole file performs a complete loop and plods on again. Plod is the right word. No dance step is attempted while on their rounds, no swaying of the body, no rising on to the ball of the foot—a steady rhythmical plod, but withal a swaggering plod. The accordion player sits on the bank and squeezes out a familiar, common tune. The rhythm is strengthened by the twanging of the bow, the clacking of the horse's wooden jaw, by the bell sound of a triangle, and by the tapping of the wooden ladle and short stick held by the man-woman.

So do the folk, with the simplest means, produce good, solid effects, and in rural England you may be sure of a fine, firm rhythm. It must have been this gift of rhythm as much as bodily agility which gave the dancing English their ' fair presence '. When one hears Swiss folk singing so strongly in parts—a gift of the Welsh but not of the English—the effect is often spoilt by uncertain rhythm, and one sees why the Swiss musician, Jacques Dalcroze, was moved to invent his system of eurhythmics. As a rule English rhythm is eurhythm.

A grunt proceeds from the leader of the deer. The file splits into two, facing each other. They meet and retire. As they meet each man-deer raises his antlers with a beautiful, instinctive movement, as though he would fondle the head coming to meet his. Now they appear to lock horns as a trial of strength, which would be dangerous sport for such formidable heads. It is a relief when they cross over safely, passing left shoulder to left shoulder, turn and begin again from the opposite side. This meet-and-retire movement with the cross-over is repeated several times, and finally tails off into a renewed single file. And that is all. Yet once they danced ' the Hays and other Country dances '.

The six men-deer wear a costume much too medieval to have come from the folk they are. Yet weather and use have faded the whole into

something not inconsistent with the forest-scape. Their flat caps of velveteen, their tight-fitting jerkins, their breeches and white stockings do not shock when seen beneath the mighty horns. These are set in animal heads of wood, and are bound with iron. They are covered with many—how many ?—coats of paint, ' which they didn't ought ' says the leader, very properly. The heaviest pair weighs 84 lbs. so the day costs a good deal in sweat and shoe leather. The heads are fixed on stout sticks, and these are grasped in both hands in front of the breast. The arms of the great families no longer appear. The horse has an ancient wooden head with a workable jaw, which is snapped on the first beat of each bar. A red cloth hangs round the man's legs, he holds a whip and wears a cloak spread over his steed's hindquarters. If, as Plot says, he once held thin boards between his legs he no longer does so. The horse-body is a shape of lathes with a weight at the back to keep it down, from which the horsecloth hangs and in which the man stands. Plot also says this dancer twanged the bow. I do not think he could have worked both jaw and bow at the same time, especially if he carried a whip, and it seems probable that this is the same head seen by the 17th century doctor.

Maid Marian wears a faded jacket, and a skirt not long enough to hide the trousers beneath it. Her headdress is a veil which floats behind her. She carries a wooden ladle, the bowl roughly scooped out of the block, and a thickish stick with which to tap it, both dark with years and use. She gently tells the housewives that she has come to help with the washing. The Fool wears a crumpled court-jester's dress, once parti-coloured, and carries a bladder with which he occasionally makes play. The musician, once the violinist who knew the correct and beautiful traditional air, now a player of the accordion, wears a short cloak and a wide felt hat. He plays three tunes, ' Bobby Shaftoe ', ' Her Golden Hair ' of music hall memory, and a not unpleasing nondescript tune in $\frac{2}{4}$ time. His attendant triangle boy and the hunter boy are dressed alike in faded reddish jerkins with skirts to them, white stockings and flat caps. The triangle was introduced about 1904, in order to accentuate the rhythm—perhaps when the dancers lost their old violinist—and the first triangle boy was Mr Bentley, the present leader. The bow and arrow are too small to have killed a deer, but appear to be as antique as the horse and the ladle.

These costumes have no tradition behind them. They were designed for the dancers by the too-knowledgeable wife of a former vicar. She took for her models the dresses of the Morris ' side ' with

its Fool, Hobby horse and Maid Marian, depicted in the famous Betley window. She could not manage trunkhose, so tight breeches took their place ; she could not manage Maid Marian's laced bodice so a jacket replaced it, and I suspect the former man-woman, no doubt considered coarse by the helpful lady, assumed the name of Maid Marian with her dress. Today nobody remembers what the former dresses were like, but a photograph, in the possession of the Bentley family of about forty years ago, shows the Fool, already in his Betley window costume still clinging to a furry cap. In all probability this was his original headdress, thus bringing him into line with many a ritual Fool in England, and all over Europe. The assumption of some last vestige of animal disguise would be natural to his character.

The leader declares that the leadership has been in his family for at least 400 years. Such firm family traditions are generally founded on fact. They are not to be laughed at, for all such village rites are in the hands of certain priestly families, and jealously guarded by them. This family has lived in the place the 400 years required, a Bentley being entered as Constable of Abbots Bromley on the muster roll of 1539. Experience teaches that this tradition of leadership exists everywhere,—in Hampshire, amongst the mummers ; in Béarn, in the Basque Country, in Portugal amongst the Mouriscos—who are the mummers of that country.

All this time the dancers have been standing by their horns, which make an outlandish heap in the middle of the barton, and at which the farm horses look askance. The farmer and his wife drop a copper or two into Maid Marian's ladle, and bring out welcome mugs of cider. Thus refreshed the men become reindeer once more, fall into file, wind out of the barton and across the park-like fields beneath the great trees left behind by the receding forest. An unforgettable sight, and one at which the cows lift their heads and then their tails, breaking into a frightened, inquisitive, lumbering gallop alongside these creatures of another age, creatures who themselves provided milk, flesh and covering when the green fields were yet beneath the ice. The visits continue till every outlying house, all unknowingly, has been taken its share of abundance and luck. Towards 5 o'clock the weary bringers of it pull themselves together, hold up their heads behind the mighty horns, and stepping well and together begin their dance in the village street itself.

' And that is the time to see them ' says the policeman proudly. Like all folk-feasts the evening ends with drinking. But by that time the horns of plenty are safely back in the care of the church.

A few questions may be considered, but not answered. That these foresters should find their sacred animal, who was god, food and raiment all at the same time, in the deer of the forest, is what might be expected. We have only to turn to the classic example of the Ainus' bear to understand how naturally this would come about. And Abbots Bromley has been a forest village until the partial clearance of Needwood. In the Exchequer records of Edward I we read of four gentlemen who, in the free chace of Needwood, took 100 bucks and does. At one time it covered ' 7860 acres of very forest-like ground '. It was divided into parks, each with its proper number of deer. Thus Hanbury Park had ' 1000 old dotard oaks and 300 deare '. An annual court called the Woodmote was held to hear encroachments and offences ' in vert and venison '. A petition was sent to Oliver Cromwell pleading commoners' rights for ' ancient cottagers who sustain themselves and their poor families on the chace'. In 1798 the Forest had increased to 10,000 acres.[1] Everything breathes the breath of the forest, and of the forest denizens. Timber may be cut on a breadth of land as wide as a deer's leap ; the inns are Roebucks and Bald Bucks, the arms of the great families show stag's heads, the very redundance of the name, Needwood Forest, helps to show its antiquity and its hold over its sons.

When the buffaloes had wandered too far, the Mandan Indians put on buffalo heads with skin and horns to perform their buffalo dance. Some with bows in their hands represented hunters who shot at the buffalo-men. A devil-like figure with huge phallus and buffalo tail, chased the women, and they said the dance ' never failed to make the buffalo come '. With this analogy before us, we cannot suppose but that the long-ago forest folk of Needwood were driven to practise the same magic, and that today we see them all unconsciously enticing the deer within range of that one antique, small bow. But reindeer ? Reindeer were known in the far north of Scotland up to the 13th century. Reindeer in Needwood ? Those mighty horns, hanging so innocuously in the church, whence came they ? And when ?

Again, when did the Hobby horse, the Fool and the man-woman of the far later morris, mummers and sword dance ceremonies, join themselves to the 'old ancient thing' ? The morris lives or lived on all sides of Needwood, notably at Lichfield at the moment of the Whitsun Bower on Greenhill, which is a ' summer hall ' of greenery, in which

[1] *History of Staffordshire.* Stebbing Shaw, 1798.

a feast is held in connexion with, and confused with, a medieval Court of Array. These characters then had not far to go to join the reindeer-men (and traditions do travel, I have even seen them in the act) carrying with them their own interpretation of fertility magic.

The phallic figure chasing the women shows without a doubt that the buffalo, in the conception of the North American Indian, was bound up with general fertility and abundance. Many English and European Fools carry what may be phallic emblems and wear tails, so perhaps the Abbots Bromley Fool was, after all, one of the original company. The fact that it has been a Winter solstice rite[2] connects the dance still further with fertility in general. When used for its primitive purpose, and in its primitive days, it would, like the buffalo dance, have been resorted to whenever game was scarce, regardless of the season. I should add that there is also some evidence of a supposed Celtic deer-goddess, whose priestesses owned, milked and probably killed the deer, when the animal was sacred, but at the same time food and clothing. Far older than this is a queer conception from the brain of a man of the old Stone Age. On the wall of the Trois Frères cave in Ariège, France, someone once drew a man masquerading as a stag. The artist was so imbued with the animality of the man that he drew the stag's body standing upright like a man. Yet he was so imbued with the humanity of the stag, that in the animal's body a man's anatomy is plainly seen—thorax, scapula, patella. The head bears great spreading antlers, and beneath them a queer, pleading face, masked perhaps, has looked from the rock wall for ten thousand years.

[2] The dance was formerly done in the churchyard after service on Christmas day, which corroborates Doctor Plot.

Currency Bars and Water-Clocks: A Reply

by Reginald A. Smith

[Mr Reginald Smith has sent us the following criticism of Mr E. Wyndham Hulme's article in our March number. He kindly gave permission for this to be submitted to Mr Hulme in order that any rejoinder which the latter might wish to make could be printed at the same time.—Editor].

WITH reference to Mr Hulme's attack on Currency Bars and Water-Clocks in Antiquity for March, attention may be drawn to the difference between science and archaeology, as discussed by Dr Randall-MacIver in the same number. The hard-headed man of science is not impressed by an array of authorities, and prides himself on dealing with things that can be weighed and measured. Currency Bars certainly come under that heading, and Mr Hulme quotes another full-fledged metallurgist, Dr Newton Friend, who has come to the opposite conclusion and supports the Currency Bar theory. Again, a classical scholar is quoted on the question of Caesar's description of currency in Britain; but Prof. Housman would probably appreciate the opinion of the late Prof. Haverfield, who settled (as he thought for all time) the reading *taleis ferreis* in the *Classical Review*, 1905, p. 206. When several readings exist, *praestat difficilior*.

Archaeologists may be reminded that the identity of these iron slats has been recognized for instance by Déchelette (*Manuel*, II, 1558) and in Ebert's *Reallexikon*, vol. III, p. 68. Further, Pheidon of Argos called in all the iron Currency Bars when coinage was introduced, and dedicated them in the temple of Hera where a great hoard of them has been found in our own day (Waldstein, *The Argive Heraeum*, I, 62-3). Bars in the form of spits *were* therefore in use on the Continent, but by Caesar's time were strange enough to call for special remark in Britain. Why should they be expected in the few graves known in the Currency Bar area, and why should there be any oral tradition of such hoards and their place of concealment? Even if the reading *annulis* were taken seriously, why has no hoard of iron rings as currency been found in this country?

Mr Hulme devotes four pages to a lecture on smithing, which may be useful to the trade but hardly helps the argument. The scholiast's quotation from Pytheas may 'have been overlooked by all historians of the iron manufacture', but not by archaeologists. He himself quotes Depping and Michel's *Wayland Smith* (1847), and it is again referred to in *Archaeologia*, XXXII, 324, and *Antiquaries Journal*, I, 189.

The distribution of these iron bars has been mapped (*Archaeological Journal*, LXIX, 424; Bulleid and Gray, *Glastonbury*, II, 399), and nearly all are included in a great square from Northampton to the south coast and from the Severn to Hampshire. If they are unfinished swords, why are they not found in quantity, for example, on the southeast coast? Swords were as much needed and used there as elsewhere; but Caesar tells us that Kent was the most civilized part of Britain, and it would be the first to have a coinage (about 100 B.C.). Hence the bar currency is found in the interior, where coins were unknown till half a century later.

The various counts of Mr Hulme's indictment are here dealt with in an abbreviated form (*italics*) without any conscious perversion of his meaning :—

A. *No similar system elsewhere.* Waldstein found in the ruins of the Heraeum two bundles of rods which he considered obsolete currency. Déchelette subsequently investigated the find in *La Collection Millon*, p. 229. A drachma was originally a handful of such spits or obols.

B. *No such bars in burials.* Very few graves have been found in the Currency Bar area, and the absence of bars is not surprising. No British or Gaulish coins are found in pre-Roman graves.

C. *The system unknown in the Celtic area.* Déchelette recognized two denominations in the spits found in the Saône at Châlon, which are described in *La Collection Millon*, 'Broches en fer d'époque gauloise servant de monnaies primitives', pp. 191–243, where possible parallels are quoted from Etruria.

D. *Sword-shaped bars found with Gaulish coins near Berne.* It has been proved that the Tiefenau site was an armoury. Unfinished swords do occur there, but they have long tangs not folded over, and expand away from the handle unlike the British Currency Bars.

E. *Iron bars suddenly disappeared, and* (*p.* 63) *unfinished swords are not likely to have been seen or described by Caesar.* Perhaps they never were in use in the southeast, which Caesar visited; but whether he saw them or not, he records the use of such bars as currency, and his word *talea* is appropriate for a slat. He knew it was generally of wood, and therefore added the qualifying *ferreis*.

F. *No tradition of buried treasure on Currency Bar sites.* Not surprising : the site of buried treasure is not generally advertised.

G. *The socket-handle impossible on a finished product.* So far from being impossible it exists on hundreds of examples, and is certainly not a stage in the manufacture of swords, as proved at Tiefenau, where the tangs are not bent over, but are flat and tapering.

H. *The Celts had cutting implements of various sizes.* This to account for the various denominations, and the weight system is recognized on p. 70. If one size was for swords, what were the heavier ones for ? Even if the smaller sizes were unfinished knives, what would be the finished form of the largest mood ?

Caesar's words *ad certum pondus examinatis*, however translated, evidently apply to the finished Currency Bar, not to the lump of iron as it was before being shaped, like the sports prize in the *Iliad*, XXIII, 826. Granted that ' it is difficult to conceive any people, however primitive, employing two standards at the same time which are completely independent of one another ' (Ridgeway, *Origin of Metallic Currency*, p. 3) ; yet Mr Hulme will also have read in the same work (pp. 262, 310) that among all primitive peoples copper and iron are appraised by measure, not by weight. His own contention that ' iron was no doubt sold by weight, but was never made to weight ' is not very luminous ; but consider what happens when iron bars of one or more denominations are manufactured by measurement. As Euclid might say, bars of the same length, width and thickness, made of the same metal, are equal in weight ; and the only way to arrive at the normal weight is to strike an average. If one denomination is found to tally with a bronze weight of the same people and period, marked as a unit, the probability of deducing a weight system is evident, whether the iron bars were valued by length or weight. Averaging of course is open to abuses, but the weight system is recognized by Mr Hulme, not indeed in the alleged Currency Bars but in a series of bronze vessels found at Wotton in Surrey, which at first sight are not promising material for metrology. Here his objection is to the use of any of them as Water-clocks.

The archaeologist deals with things found and tries to explain them. In the case of Currency Bars he is helped by Caesar, but for literary evidence as to Water-clocks he has to consult early Hindu texts for one system, and classical writers for another. The dripping type is

well known, but the percolating type, which is (or was till recently) used in India, Ceylon and Morocco, is known to be ancient in India, and would explain a number of thin bronze bowls with perforated base, which date from early British times. Before the 6th century of our era, the percolating system was described in a Hindu manual of astronomy, the smaller vessel sinking in a large one full of water, sixty times in the day and night. Mr Hulme figures a familiar hanging cauldron, and because some Water-clocks are of that shape, assumes that all our specimens were for culinary purposes. The majority are hemispheres or rather less than hemispheres, sometimes furnished with a light iron collar to give a little rigidity ; but it would be difficult to cook anything in them, and the perforated base is surely decisive. One from Ceylon and four from Britain are figured in *Proc. Soc. Antiq.* XXI, 326, and show the various shapes.

Mr Hulme suggests that a finely made bronze bowl with straight sides and eleven pairs of radial ribs (presumably that figured in Brit. Mus. *Early Iron Age Guide*, fig. 197 and *Proc. Soc. Antiq.* XXVII, 81) was a fat-reducing vessel. It is $9\frac{1}{2}$ inches across and nearly 3 inches high. The ribs are beaten up from below and converge towards a central perforation, which is obviously original and intentional. Any cook could here put the metallurgist to shame, and its use as a Water-clock is still the best suggestion. Apart from this deplorable lapse into comedy and the first sentence on p. 69 (which is quite unintelligible), here is an earnest attempt on the part of Applied Science to put archaeologists on the right lines and to eradicate error ; but Mr Hulme's arguments have not convinced the writer of the articles here pilloried.

Rejoinder

by E. Wyndham Hulme

Mr Reginald Smith has made my task of replying to him easy, as he has evaded the main issues raised by me and concentrated his attack on other portions of my paper. Let me, therefore, recall that in 1905 he persuaded archaeologists and others to abandon the 'half-finished sword ' theory in favour of his ' Currency Bars ' on two grounds, *viz.* (*a*) that the bars contained too much metal, and (*b*) that the smiths who shaped the bars would not have prepared a large number to hand

on to another for the finishing process (*Proc. Soc. Antiq.* 1905, Ser. 2, XX, 182). These were, and still remain his stock arguments.

In the March number of ANTIQUITY I commenced by stating that these views betrayed a want of familiarity with the elements of smithing practice, and I went on to show that there was always a loss of metal in finishing and that smithing had always been an interrupted operation—divided into the mooding and smithing stages respectively. Mr Reginald Smith does not challenge this account. Hence I am entitled to claim that the way is open for the reinstatement of the old belief. I am glad to say that my four-page 'lecture' on smithing has brought me support from scholars, archaeologists and others not connected with ' the trade '. Mr Reginald Smith says my lecture hardly helps the argument (p. 211), but in the opinion of some of my correspondents the ' Currency Bar ' theory is doomed. It is opposed to the sense and practice of the trade.

Moreover, I went one step further, and under the guidance of Major Marples, showed that the folded socket was but a stage in the tang formation. What is Mr Reginald Smith's reply? A blank negative! He says (p. 212) the socket-handle ' is certainly not a stage in the manufacture of swords '. If he really feels so certain how is it that he does not tell us how the tang was made in early days without passing through the socket stage? All my experts accept Major Marples' explanation as correct.

If the ' half-finished ' sword theory is the right one a good deal of Mr Reginald Smith's reasoning falls to the ground. One objection, however, requires an answer. He asks how do I account for the distribution of the bars and their absence, for instance, in the southeast coast district of Britain? My answer is to refer him to the maps in Messrs. Kendrick and Hawkes' *Archaeology in England and Wales*, figs. 73 and 77, which show the areas occupied by the Celts of the Iron Age B culture and the Belgae respectively. The sword-moods are found mainly in the Celtic area, and as the two races were on an unfriendly footing the Celts were not likely to trade with the enemy. Possibly they buried these hoards of unfinished weapons to prevent their falling into the hands of their opponents.

At Marin on the Lake of Neuchâtel out of about fifty Gaulish swords found there no two are said to have agreed in respect of length, breadth and weight (Keller, *Lake Dwellings*, 1878, pp. 406-14). The swords found in the entrenchments of Alesia (52 B.C.), according to the same authority, agree exactly in general form with those of Marin. If the

swords varied so greatly there must have been a corresponding variation in the shaped bars from which they were made. This accounts for the wide limits set in Mr Reginald Smith's double-unit class to which, no doubt, the Celtic swords and daggers belong.

With regard to the subject of Water-clocks, I am content to point out that the arguments of Wright and Déchelette remain unanswered. Unless Mr Reginald Smith has some other explanation to offer he would appear to be committed to a ' Hot and Cold Water-clock Theory ', which seems incredible.

For the careless omission of a line in my revised typescript I accept sole responsibility, and offer my apologies to readers of ANTIQUITY. The words omitted from the third line of p. 69 were ' still holds the field ' with a reference to the discussion on Mr Reginald Smith's second paper (*Proc. Soc. Antiq.* 1915, Ser. 2, XXVII, 94–5). At this meeting, so far as reported, the Water-clock theory met with no support, but in the British Museum *Guide to the Early Iron Age*, 2nd ed., p. 164, it is stated without any qualification. Now we learn for the first time that it is only ' the best suggestion '. I think Mr Reginald Smith is wavering, and I hope to secure him as a convert on both issues within a reasonable period of time.

Notes and News

THE NEW BATTLE OF GERGOVIA

Some stir has been caused in the French press by the mention, at a meeting of the Académie des Inscriptions on 10 February, of the alleged discovery of a Gallic oppidum. The new oppidum, found by M. Maurice Busset, Curator of the Clermont-Ferrand Museum, was hailed as Gergovia by M. Pierre de Nolhac in *L'Illustration* of 25 February. One or two English newspapers recorded this discovery of a lost city, and *The Times* of 7 March gave two illustrations of the supposed fortifications. The new site is the plateau Côtes de Clermont, to the north of Clermont-Ferrand, and M. Busset claims to have found not only the defences of the town, but also numerous stone huts, in some of which he has unearthed coarse pottery which he considers to be Gaulish. Gallo-Roman sherds have from time to time, it is true, come to light on certain parts of the hill, which is not surprising in view of the nearness of Augustonemetum (Clermont), but they need not point to more than the existence of a farm. Six or seven miles away on the other side of Clermont rises another plateau, strikingly like the Côtes de Clermont in appearance, which was identified by the Florentine humanist Symeoni in the 16th century as Gergovia, and on which finds of pottery and coins have been made. This site has satisfied the leading authorities on Caesar's wars[1] up to the present but M. de Nolhac dismisses it—and Symeoni—with contumely, and regards as valueless the medieval charters referring to lands in the immediate neighbourhood of the hill, in which the name Gergoye (or Gerguya and other near variants) occurs.[2] The patois form Dzargoy is still used by a few old inhabitants in the villages round, though it is now being ousted by the name Gergovia given to the plateau as a testimony to the efforts of modern scholarship and local patriotism. Certain other statements made by M. de Nolhac will surprise those familiar with Gergovia: for instance, that there is no water-supply on the hill, and that there is

[1] Jullian, *Hist. de la Gaule*, III, 465, n. 3. Rice Holmes, *Caesar's Conquest of Gaul*, 2nd edn. 1911, appendix, 756 ff.

[2] The earliest known is of 958, but the most definite is of 1230. See Desforges and Fournier, 'La Bataille de Gergovie', *Mém. de l'Acad. des Sciences, etc., de Clermont-Ferrand*, Jan. 1933, p. 5. This paper contains a detailed discussion of the topography of the real Gergovia, and a new theory as to Caesar's attack on the oppidum.

PLATE I

HUT ON GERGOVIA
Ph. E. Desforges
(*See* p. 216)

PLATE II

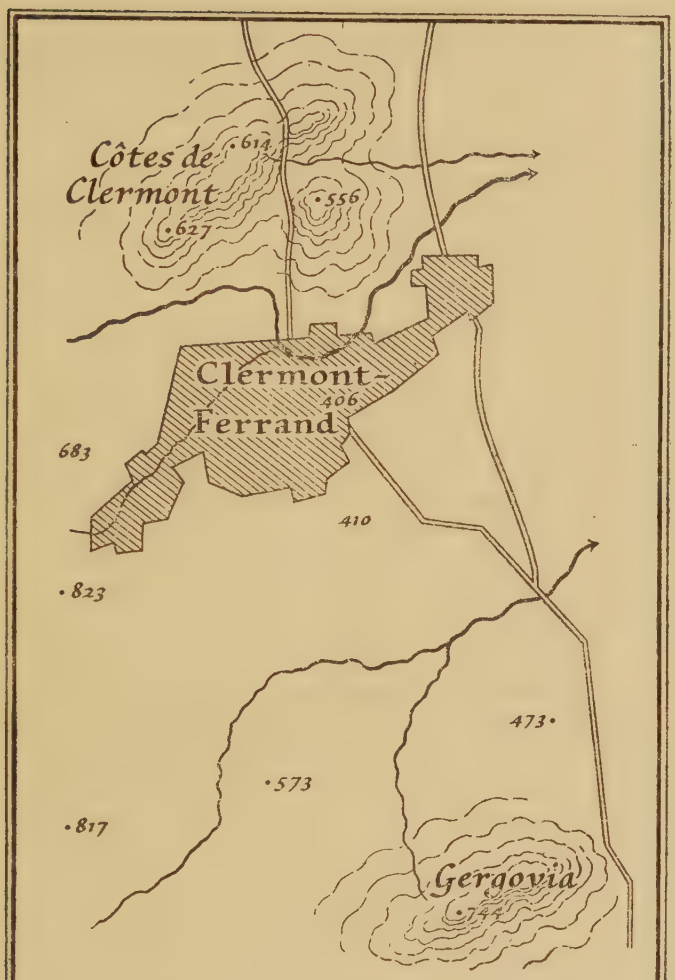
A TRIBUTE-BEARERS FRIEZE AT PERSEPOLIS

By permission of the Illustrated London News

(*See* p. 219)

A HOARD OF PALSTAVES FROM DEWLISH, DORSET

(*See* p. 221)



Sketch map showing the rival sites claimed for Gergovia.

no trace of any town wall. There are, in fact, vestiges of an old wall along the edge of the hill-top, which would need excavation before their rejection as possible ramparts. The excavations of Caesar's camps carried out by Colonel Stoffel are apparently not thought worthy of any serious attention, and the sponsors of the new theory, it may be added, place Caesar's main camp on the site of Clermont itself, and thus beyond the chance of investigation.

The new ' oppidum ' can, however, be subjected to serious criticism on its own merits. The following remarks are largely drawn from articles by M. P-F. Fournier, Archiviste of the Puy-de-Dôme, which appeared in the Clermont *Moniteur* of 25, 27 February and 1 March. M. Fournier has also kindly supplied photographs and some additional notes.

M. Busset (in *L'Illustration*, mentioned above) describes several stone walls running parallel to the top of his plateau, connected by a number of transverse walls. The reconstruction scheme which he gives of these ' fortifications ' is very difficult to understand, for the transverse walls would be a help to any assailant. They are, probably, not fortifications at all, but the dry stone walls common all over the mountainous districts of Auvergne and, indeed, the normal field boundaries in any rocky country. They are specially noticeable in places where steep hillsides are cultivated in terraces. Agriculture and viticulture have suffered during the last century in France, as elsewhere, and while on such a hill as the Côtes de Clermont there are still vineyards on the lower slopes, the upper slopes have lapsed back to grass, and the terrace walls remain to bear witness to more productive eras.

The most imposing of all the walls of the new ' oppidum ', is a buttressed retaining-wall. The narrow terrace above it is crossed at intervals by boundary walls, and parallel to the buttressed wall is another retaining-wall. This last wall would constitute the upper rampart of the plateau if it were fortified, but at no point has M. Fournier been able to find any signs that it projected above the edge of the plateau, as a fortification wall would necessarily have done—nor is there any sign of the fallen rubbish which one would expect to find in association with so extensive a system. The size of the walls here and elsewhere is often simply due to the quantity of stones which had to be removed from the land before the soil could be cultivated. There are also stone huts dotted about the Côtes de Clermont, often built into the walls themselves, and called by M. Busset ' des sortes de casemates étroites voutées à encorbellement . . . analogues à celles que l'on a

signalées à Tyrinthe, Mycène et Orchomène'. Such 'casemates' are to be seen all over Auvergne, to go no further afield, and are peasants' tool-sheds, of no great antiquity. Plate I shows one from the Côtes de Clermont which stands on the old Gergovia; such huts have been put up in the region within the memory of person now living. It may further be noted that most of the wall 'casemates' open downhill. As M. Fournier says: 'Quelle charmante amabilité de la part des défenseurs que de ménager ainsi des abris à l'assaillant'. OLWEN BROGAN.

THE PALACE OF DARIUS AT PERSEPOLIS

Astonishing discoveries have been made by Professor Herzfeld, Field Director of the University of Chicago Oriental Institute to Persia. These consist of remains of sculpture and of much older cuneiform tablets in the Elamite language. Of the latter discovery no more than the bare fact is known at the moment, but it may well prove to be one of epoch-making importance. The sculptures speak for themselves (plate II). Their marvellous preservation is due to their having been covered up by the decay of the mud-brick walls of which the adjacent buildings were constructed. We are glad to learn that, thanks to the enlightened policy of H.I.M. the Shah of Persia, the necessary measures of conservation are to be taken.

The frieze here shown represents 'a great tribute procession of representatives of twenty-eight nations of the empire [of Darius], alternatively introduced by a Persian or a Median. . . . They bring their gifts to the Nōrūz, or New Year's festival on 21 March. The procession is arranged in three rows, and the representatives of each nation occupy a field of their own, framed by cypresses, the typical tree of Southern Persia. . . . The twenty-eight nations represent the twenty satrapies of old Iran, including a vast territory extending from Farghana in the northeast to Abyssinia in the southwest, and from the Balkans in the northwest to Sind in the southeast. . . . The usual gifts they bear are horses, camels, or bulls of special breeding . . . or rarer animals such as a lionness with her cubs, an antelope, a giraffe, the last ones being brought by Abyssinians and the people of Punt, which is the frankincense country on the Straits of Aden. Besides animals, every nation was accustomed to present specimens of the national costume of each, and, furthermore, vessels, probably containing something, or actually made of gold, and rendered with great care and skill by the Achaemenian artist'

This magnificent empire was destroyed by Alexander, the Macedonian military adventurer, together with the palace itself which he burnt in a fit of drunken madness. ' Although this story is told only in the romantic class of literature, such as Plutarch's life of Alexander, the fact of the fire is established beyond doubt. Everywhere a thick layer of charcoal covers the soil of the buildings—the remains of the cedar roofs which came crashing down as they were eaten by the fire. . . Later the whole terrace was covered, buried in earth up to a height of about 23 feet. No method of preservation could have been more efficient, and today the sculptures thus protected under these accumulations through twenty-five centuries can be unearthed in perfect condition '. (Professor Herzfeld in the *Illustrated London News*, 25 March 1933, p. 406. We are indebted to the Editor and to the Director of the Oriental Institute of Chicago for permission to quote the above passages and to reproduce the illustration from that published in the I.L.N., p. 405. Further and more detailed illustrations were published in the issue for 1 April).

CAVES OF SOUTH AFRICA

Mr John Goodwin writes from South Africa that he has been investigating some interesting sections. On a farm, Oakhurst, George District, he has determined the following stratification of industries :—

Late Wilton, with nacre and ostrich egg shell ornaments, and a number of crescents of mussel shell, together with the usual types of stone tools and pottery.

Smithfield C, with three skeletons—all of the San type.

Smithfield B, with two skeletons—one fragmentary, the other closely allied to the San type ; as well as burnt bones, flakes and cores.

It is interesting to note that all the pottery found was in the Late Wilton layer.

Although no rock-shelter paintings occurred at the site, examples painted in red appear in another shelter some fifty yards or so away.

In the great cave at Mossel Bay, Goodwin has determined the following sequence of layers, containing :—

Disturbed Midden material
Undisturbed Midden material
Mossel Bay types of tools
Howieson's Poort types of tools
Mossel Bay types of tools.

Furthermore, in the exposures of the twenty-foot raised beach not far away, rolled Mossel Bay implements were found *in situ*.

As Goodwin has already shown at the Cango Caves that the Mossel Bay industries are contemporary with those of Still Bay, and as Peers proved at the Skildegat cave that the Howieson's Poort industries are also contemporary with the Still Bay finds, it would now appear that all three types of industry are about of the same age and that they date more or less to the period of the twenty-foot raised beach. It is indeed excellent to observe that an interest in prehistory is still flourishing in South Africa, and that such interesting and important data are being collected.

M. C. Burkitt.

PALSTAVES FROM DEWLISH, DORSET

Among the leading archaeologists of Dorset in the middle of the last century was Mr Charles Hall, of Ansty, who made a considerable collection, chiefly of Bronze Age objects. The collection remained in his family until 1900, when it was placed on loan in the Dorchester Museum and it was purchased by the Museum in 1912. Unfortunately by the time they came to the Museum there were no labels on the objects, nor had any list or catalogue survived. Consequently in most cases they could only be described as ' Probably Dorset, but locality unknown '. Among such objects were the five palstaves shown in the accompanying photograph (plate III).

Mr William Shipp, of Blandford, was the editor of the third edition of Hutchins' *History of Dorset*, which was published between the years 1861–1870. In preparation for this work he collected a large number of notes, as well as letters, drawings, newspaper cuttings, plans, engravings, etc., about almost every conceivable subject relating to the county and filled six large scrap-books with them. These scrap-books are now in the Museum library at Dorchester, and in vol. III, p. 37 is a sepia drawing entitled ' Six Bronze Celts found by a boy in a field near Turnpike Road, Dewlish. In the possession of Mr Charles Hall of Ansty, 1845 '. On comparing the above mentioned palstaves with the drawing, their identity was established without doubt. The whereabouts of the sixth palstave is not known.

It seems a reasonable conclusion that the palstaves were found together and so may be described as ' The Dewlish Hoard '.

No mention of this hoard appeared in the third edition of Hutchins' *Dorset*.

C. D. Drew.

GOWARD HILL CAIRN, CO. DOWN

The excavation described below is the first of a series to be carried out by the writers in conjunction with the archaeological section of the Belfast Natural History and Philosophical Society. It was conducted in the summer of 1932, on a horned cairn on Goward Hill, in the townland of Goward, some two miles east of Hilltown, co. Down. The cairn is composed of loose stones and measures about 115 feet by 50 feet by 6 feet high. It contains three open chambers at the east end, extending immediately behind the horns, and very ingeniously constructed. The orthostates rest against pairs of jambs kept apart by sills rising to about half the height of the chambers. The western end is blocked by a large upright slab, while the eastern end is partially closed by two portal stones forming an integral part of the horns, with a two-foot entrance between them. All the chambers were filled with earth and boulders ; the only finds in the western and central chambers being a few sherds lying directly on virgin soil: in the eastern chamber some two dozen small packets of ox bones, clearly intentionally deposited, were found in the stone filling. The side walls, here doubled, had partially collapsed, and had been repaired with rough dry-walling by the depositors of the bones.

An unusual feature is the asymmetry of the horns : that to the north has six uprights whereas the south horn has three. The whole forms a nearly true semicircle (diameter 37 feet) and there is every reason to believe that it is complete as it stands.

Most of the pottery found came from the forecourt. Though certain sherds have neolithic parallels, the group as a whole appears to belong to the Hallstatt–La Tène complex, and the fragments from the chambers are of the same type.

A small stone found loose on the cairn has an engraved lozenge ornament of Bronze Age type.

To test the problems raised by this excavation it is proposed to examine other horned cairns of the same type in the north of Ireland.

OLIVER DAVIES : E. ESTYN EVANS.

BERTRAM, STUKELEY AND THOMAS WRIGHT

The apology for artistic forgery presented on Roger Bertram's behalf by Mr RANDALL in the March number of ANTIQUITY will find acceptance with those who can ' salute his genius ' and at the same time ' ignore his work '. But not everyone is in Mr Randall's happy

position of being able to do both. Haverfield, while he described the affairs as ' almost an undergraduate's joke ' (which implies perhaps little aesthetic criticism) had no doubt as to the ' untold confusion ' of what Mr Randall himself calls ' the evil influence of Bertram's forgery '. Mr Randall is in actual fact an accommodating advocate, as many of his remarks, and especially the quotation from Haverfield (p. 59) reveal, but one suspects that not a few of his readers will find themselves still righteously angry, as were Woodward and Mayor, and feel that they cannot as yet afford to laugh at ' the immense harm that Bertram had done to the study of English archaeology '.

My intention however is not to disagree with Mr Randall as apologist, but to note a few points which have been suggested to me by his historical treatment of the Bertram controversy, with particular reference to the correspondence with Stukeley. The early history of the Stukeley MSS has always been something of a problem. Eleven letters from Bertram covering a period of two years were included in the collection of MSS which passed into the possession of John Britton.[1] When and how this happened has not been established. They had been, we are told, in his possession ' many years ' in 1845, but he hesitated to publish them,[2] and in this he persisted until his death, though he displayed a portion of the collection at least twice—at the Lincoln meeting of the Archaeological Institute in 1848, and to the Society of Antiquaries in 1853.[3]

It may be of interest to call attention here to the references to this matter which are contained in the correspondence between Thomas Wright, the antiquary, and his patron Joseph Mayer of Liverpool.[4] As early as 1840 or thereabouts Wright had examined portions of the Stukeley MSS (including a letter from Bertram), which had apparently been left for examination by the manuscript department of the British Museum, under Sir Frederick Madden.[5] A comparison of the dates makes it almost certain that the MSS at this time were in Britton's

[1] Britton's own statements in *Gent. Mag.* 1854, XLII, 98, and in his *Memoirs of Henry Hatcher*, 1847, p. 9.

[2] Preface to Britton's *Memoir of Aubrey*, quoted by Lukis in preface to *Stukeley's Diaries and Letters*, vol. I. (Surtees Society, 1882).

[3] *Proc. of Arch. Inst., Lincoln Meeting*, pp. LVIII ff. (By Albert Way, with brief account of Stukeley). *Gent. Mag.* 1853, XXXIX, 77.

[4] British Museum Add. MS. 33,346.

[5] *Lit. Gazette*, July 1846, p. 627, quoted by John E. B. Mayor in the preface to *Ricardi de Cirencestria*, vol. II (Rolls Series), p. CXVIII, note 5.

possession. In a letter dated 6 November 1853, Wright, always on the look-out on behalf of Mayer (with whom he had recently come into touch) for valuable additions to his collections or possible material for publication which might bring honour to them both, wrote as follows :—

> Mr Britton has left with me some volumes of the Stukeley collection and some other things, to show you when you come : he has also sent me the enclosed notice of the Stukeley collection drawn up by Albert Way.[6] . . . I think very much of the Stukeley collection indeed. It contains multitudes of accounts with drawings of antiquities found in his time, the knowledge of which except as preserved in these MSS is totally lost, and there is a great deal of it that is really worth printing. I am inclined to think that he would accept the original price of £60 for them.

The Stukeley MSS then had been purchased by Britton for £60—a respectable sum, which doubtless explains his dread that publication might tend to reduce their value. ' They would ', he says himself, ' have been given to the world had I been insured against the risk of loss from their publication '.[7] It seems clear that he did his best to resell, and at a fair price. The examination at the British Museum was probably one of his earliest efforts ; but though Sir Frederick Madden was convinced at once of the genuineness of Bertram's ' Richard ', Britton never succeeded in carrying through the transaction, for his price appeared too high. ' Those foolish people at the Brit. Museum ', says Wright scathingly in a letter written on 6 January 1857, ' refused to buy it (*i.e.*, the Stukeley Diary) and the other papers for £50 a few years ago '. Nor did Mayer act in the matter, in spite of hints from Wright that others were making proposals to Britton for the MSS. When Britton died on 1 January 1857, Wright at once became urgent and on 6 January he sent the following to Mayer :—

> Poor John Britton is dead at last. . . . Sotheby and Wilkinson will sell his library, etc. I would recommend you to look out after those Stukeley MSS he had. I consider that the Diary is worth printing. It is full of nice drawings of antiquities (British, Roman and Saxon) which were found in his time and have not been recorded elsewhere. I know that Roach Smith sets great value on it.

Three days later, after more inquiries :—

> I suspect that the Stukeley MSS will lie between you and the Brit. Museum, as I know nobody else likely to push hard for them, unless Lord Londesborough, who would do it at the instigation of Smith or me, which of course he will not have. I should think they will put them in more than one lot, offering the Diary by itself, because the correspondence contains many very valuable autographs which might

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[6] This is the account referred to in note 3.

[7] Preface, *Memoir of Aubrey*, cf. note 2.

> be bid for by dealers to sell separately. By what I have seen of it I think the Diary worth publishing independently of its archaeological interest. It contains a great deal of curious matter in the shape of notices of contemporary events and characters of contemporary individuals. I doubt if the Museum will give a very high price for it. However, there is no knowing, and I won't drop a word about it.

A few months later there was a hitch, and the expected sale of the MSS did not take place. In a letter of 5 April Mayer learnt from Wright that they had left Britton's hands :—

> (I am told that) . . . they are just preparing the sale of Britton's library but that the Stukeley MSS will not be there. It appears that before they came into Britton's hands they had been stolen and that the rightful proprietor having made a claim to them before Britton's death he had been induced to give them up for a consideration of about £20. I will get to know who has them.[8]

The theft alleged by Wright, and the purchase referred to, are the only details known of the history of the MSS prior to Britton's statement of his ownership. The required information of their whereabouts eventually reached Wright through the antiquary, Robert Cole, whose letter of 14 May 1857 is preserved with Wright's own correspondence, and states :—

> The Stukeley MSS have passed into the hands of Fleming St. John Esq. of Kenwick Grange, near Worcester, who is I understand a descendant of the antiquary.[9]

A plea may be added on behalf of Wright, against whom many accusations of error and inconsistency can confessedly be brought; but so much the more is it desirable to point out that in this matter Mr Randall, if only by implication, has hardly given him a fair hearing. The passage quoted (p. 55) from Wright's *Celt, Roman and Saxon* concerns the first edition of that work only. Mr Randall, in common with J. E. B. Mayor,[10] has omitted to note that in the 2nd (1861) edition[11] and in the two subsequent editions (the last after Wright's death) this passage did not appear, the following being substituted :—' I confess that the more I read this book the more I am inclined to believe that

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[8] The figure here given conflicts with the £50 mentioned by Mayor as the price obtained ' for the letters ' (*sic*) from ' a person connected with the Stukeley family '. (*loc. cit.* p. CLVII :—' Information from A. Way, Esq., on the authority of the late Rev. Jos. Hunter ').

[9] In this connexion, see preface by Lukis (note 2 *ante*).

[10] *Loc. cit.* p. XXI, although published eight years after Wright's second edition.

[11] The first edition of 2000 copies had been exhausted in March 1858 (letter of Wright, 23 March).

the whole is a mere fabrication '. Wright's change of belief came late. His spirited defence of Bertram in 1846[12] had admittedly weakened when his book first appeared ; yet he was still prepared to offer his loyalty in 1857 when, in the letter of 6 January already quoted, he wrote to Mayer :—' Among the Stukeley correspondence are the letters of Bertram of Copenhagen about the MS of Richard of Cirencester, which I have seen and which I think prove its authenticity '. That the change did come should be credited to Wright's account.

Finally, may one express the hope that Mr Randall will shortly follow his own hint as to the value of publishing Stukeley's ' notes and observations ' ?

G. CLEMENT WHITTICK.

VIVIANITE

By permission of *The Times* we are able to print the interesting article on ' Vivianite : its Place in Archaeology ' published there on 23 February last (p. 17). Vivianite was named about 100 years ago ' after J. C. Vivian, an English mineralogist, who found it in crystalline form in Cornwall, though it had been known before as " blue iron earth " '. The article in *The Times* was prompted by a suggestion that the formation of vivianite takes at least 1500 years, and their correspondent states that the article is a summary of inquiries among chemists and archaeologists who pooled their knowledge for this purpose.

' Vivianite is formed in the absence of air, and in the presence together of iron moisture, bone, or decayed vegetable matter such as leaves or bark of trees ; in clay or peat some feet down. It is a " hydrous ferrous phosphate " with a formidable formula of six letters and five figures, and, colourless when fresh, turns blue on exposure to light. (Green is rare). In the spoil heaps, nearly always when I found blue, bone was in association ; so that in the very few exceptions I concluded the vivianite was dissolved bone. It is often found with a film of creamy batter surrounding the blue.

' Would vivianite serve archaeology as dating material ? Could one argue, " Vivianite : therefore the associated finds date, say, before A.D. 500 " ? Not so, in the opinion of Mr Donald MacAlister, because its formation depends " on several conditions, the coincidence of which is a pure matter of chance ". Thus, if the iron moisture is weak and

[12] *Lit. Gazette*, 1846, p. 627, quoted by J. E. B. Mayor, *loc. cit.* p. CXLVI.

irregular, the time of formation will be longer. Perhaps in favourable conditions a few years only would be necessary. But this is not yet proved ; meanwhile I have started an experiment to see if it can be produced in a year or two. Archaeology does not seem to have dated vivianite after 1650, at the latest ; but there is no assurance that all excavators who have seen it have recorded it. I have looked through a great many reports without finding mention of it. What do definite communicated results show ?

' Vivianite was found in wood 5 feet down in mud in M. Vouga's recent lake-dwelling excavations at Auvernier (two miles west of Neuchâtel, Switzerland), late-Neolithic in date. Also frequently in the lake villages of Glastonbury and Meare (200 B.C.–A.D. 50), in the foundations of dwellings 4 feet to 10 feet down under the bark of brushwood or timber, and often in clay mixed with wood, but " not on fragments of bone ". The colour is fast, having resisted exposure for five or six years. (Incidentally, I have made a good indigo-blue paint from it). In the excavation (1928) of the earliest rampart at Bainbridge, Wensleydale, vivianite was found, the date of the rampart being *c.* A.D. 80–90. It was " built of layers of clay separated by layers of moss. . . . The decaying moss had turned the clay black and given it an evil smell ". At Fordingbridge, Hants, was found in a Roman-British midden, dated about A.D. 300, wood stained with vivianite, while the skull of a horse and other animal bones at 6 feet depth were unstained, though lying in ferrous moisture. There was a deposit of vivianite on the floor of an Anglo-Saxon hut, dated A.D. 500–650, sunk 8 feet into gravel ; a log seat and other wooden materials on a mass of clay were thickly coated with it. In a crannog (artificial island on piles in a shallow lake) at Ballinderry, Ireland, Mr H. O'Neill Hencken found it last year in a house foundation and in a drain below a level of brush layers. This was dated approximately A.D. 900. It has been found " in a large number of ancient sites in Scotland, always in moist situations with bone débris " ; but these are not dated. In 1846 a human skeleton, with vivianite crystals on it, was found in an old mine at Scharley, Silesia, which dates between A.D. 1250 and 1650.

' So we may infer that vivianite usually belongs to ancient sites, from 4 feet to 10 feet down. Whether the presence of bone is necessary to its formation does not seem clear ; its presence on wood, as explained by Mr MacAlister, may be due to the separation of bone tissue adhering to gelatine and fat. Its minimum time for formation is not yet known, though the Scharley example gives us roughly five centuries '.

We also have permission to print the following letter (*The Times*, 18 March, p. 8) by the writer of the article, in which a few more facts which had been received are given.

'Professor R. Newstead reports that he found a remarkable deposit of vivianite in the infilling of the rock-cut channel at the bottom of the Roman ditch (the outside edge) near the southeast angle of the fort at Chester. In this case the causes of formation appear to be a channel for moisture, iron in the sandstone through which the ditch was cut, and vegetable matter contained in the black soil of the infilling. The date of the ditch is the second half of the first century. "Its presence," writes Professor Newstead, "in made earth is, however, quite exceptional. On the other hand the presence of vivianite in the Upper Boulder Clay is characteristic of such deposits. At Saltney it was plentiful in the fresh cuts of virgin clay". The fresh point here is that vivianite is independent of made earth.

'On the contrary, Mr Edward A. Martin writes that on to the sea front just east of the Madeira Road at Brighton the carts used to tip the liquid mud from the streets, and this road rubbish has produced vivianite in 50 years. It thus appears that the period of 1,500 years originally mentioned in connexion with the Glasgow skull has been gradually narrowed down to 50 years, and I should not be greatly surprised if experiment proves five years enough. Vivianite, therefore, is of no use to the archaeologist as dating material; and it does not seem that its presence is necessarily a warning to look out for bones which might in themselves be datable'.

CORRIGENDA

The article on 'Dogs' in the December number of ANTIQUITY has attracted general interest and one reader suggests that on p. 413, line 7, 'higher' mammals would be a more correct statement than 'larger'.

On page 38, line 6, of the March number, '6m.' should have been given as 36 m.

Some Recent Articles

This list is not exhaustive but may be found convenient as a record of papers on subjects which are within the scope of ANTIQUITY. *Books are occasionally included.*

The Roman Wall in Scotland, by Sir George Macdonald. Royal Institution Lecture delivered 16 December 1932.

Excavations in the late Neolithic fortress of Homolka in Bohemia, by Vladimir J. Fewkes. *Proc. Amer. Phil. Soc.* 1932, LXXI, no. 6, 357–92.

An interesting account of an important completely excavated site in Central Europe. The full report is expected to be published during 1933.

The Distribution of Mesolithic Sites in the North of England, by Dr A. Raistrick. *Yorkshire Archaeological Journal* 1933, XXXI, 141–56.

Prehistoric archaeology in Wales since 1925, by W. F. Grimes [of the National Museum of Wales]. *Proc. Preh. Soc. E. Anglia* 1932, VII, 82–106.

Brings Welsh archaeology up-to-date since the publication of Dr Wheeler's *Prehistoric and Roman Wales* in 1925. There is a map, and many plans and illustrations. Condenses a great deal of work into a small compass, to the advantage of all students.

The Financial Aspect of the Cult of St. Thomas of Canterbury, as revealed by a study of the monastic records, by C. Eveleigh Woodruff. *Arch. Cantiana* 1932, XLIV, 13–32.

Social and Economic conditions in the Holland Division of Lincolnshire from 1640 to 1660, by Gladys M. Hipkin. *Assoc. Archit. Socs. Report* 1931 (issued 1933), XL, part 2, 137–256.

Ffridd Faldwyn hill-fort, near Montgomery, by Willoughby Gardner. *Arch. Cambr.* 1932, LXXXVII, 364–71.

English Place-name puzzles: a methodical investigation into the question of personal names or descriptive words in English place-names, by R. E. Zachrisson. *Studia Neophilologica*, V, 1–69.

In this article Dr Zachrisson urges the importance of the topographic as contrasted with the personal factor in OE place-names.

Ein römisches Barbierbesteck aus Köln, by Waldemar Haberey. *Germania* 1932, XVI, 129–33.

The author figures a hoard of barber's tools from a 3rd–4th century grave. They include a razor, various small knives, a pair of depilatory tweezers and two iron knives, which he shows to have been used by Roman hair-dressers instead of scissors. C.E.S.

The excavation of a barrow on Caebetin Hill, Kerry, Montgomeryshire, by H. Noel Jerman. *Montgom. Collections*, Welshpool, 1932, 176–181.

A complete circle of post-holes was found surrounding the barrow.

La civilisation mégalithique au Maroc, par le père Henry Kœhler. *Bull. Soc. préh. franç.* Sept. 1932, XXIX, 413–20.

Le paléolithique ancien en Europe occidentale et sa chronologie, par l'Abbé H. Breuil. *Ibid.* Dec. 1932, 570–78.

The prehistoric settlement of Northern Norway, by A. W. Brøgger. *Bergens Museums Årbok* 1932 : *historisk-antikvarisk rekke, nr.* 2.

Report of the excavations at Hembury Fort, Devon ; second season, 1931 ; by Dorothy M. Liddell. *Proc. Devon Arch. Exploration Soc.* 1931, pp. 90–120.

A careful and detailed account of a thoroughly well-conducted excavation. The line illustrations (by Mr Gurd and Mrs Woods) are admirable, but the half-tone illustrations are of poor quality.

Salt-ways, by F. T. S. Houghton. *Trans. Birmingham Arch. Soc.* 1929–30, LIV. [Separate pagination].

A valuable reconstruction (based upon evidence) of old tracks that may be of very great antiquity.

Le paléolithique ancien en Europe occidentale et sa chronologie ; conference faite le 12 Novembre 1930 par l'Abbé Breuil. *Bull. de l'Academie nationale de Peiping*, Jan. 1932, vol. III, no. 1.

This is a lecture delivered at Peking ; it gives a very useful and authoritative summary of the Palaeolithic period as a whole, in non-technical language.

Dr Hermann Schneider's philosophy of history, by Professor J. L. Myres. *History*, Jan. 1933, N.S., XVII, 303–16.

Professor Myres effectively disposes of yet another cumbersome theory of history.

Proceedings of the Spelaeological Society, University of Bristol, vol. IV, no. 2, published February 1933. 7*s* 6*d*.

These Proceedings continue to improve, though there is still room for improvement in format. For instance much space is wasted (and unnecessary expense

incurred) by putting short notes on a full page. (A glaring example is seen on p. 155). Why not make such run consecutively as NOTES ? But the use of two colours in the plans cannot be commended too highly. Sixty-one pages are occupied by the second report on the Tynings barrow group. A short account by Dr Herbert Taylor of a beaker in a cist (not, we think ' cyst ') at Corston, shows the valuable work done by the Society in making a full record at the time of an accidental discovery which would otherwise have been lost. Mr C. W. Phillips' paper on ' Field Work ' contains three plans in red and black of lynchet-groups, including the very fine series in Ashton Park, where Celtic and strip- lynchets both occur.

O.G.S.C.

We have received a paper-covered book of 89 pages entitled SBORNIK NEESJNE VOLSJKOVO KRAEVOVO MUSEYA, and attach a summary of its contents, kindly supplied by one of our original subscribers :—

The Lower Volga District Museum is presumably at Saratov. The preface to this volume deals with the importance of museum-collections illustrating the struggles of earlier races, with especial reference to Socialist and anti-religious ideas.

A notice of the life of Professor B. M. Sokolov (d. 1930), the first Director of the Museum, and of his work on behalf of Soviet Russia, and a list of his written works, to the number of 90, are given.

Notes on recent fetish worship by a Saratov tribe called ' Choovash '. These ' fetishes ' were made of lime tree branches, dressed in national costume, usually as a woman, but sometimes as a man or child. Various properties were attributed to them up to comparatively recent times, and examples are to be seen in the museum.

The graves of the Morduates, a race of Tartar-Finns, settled on the Lower Volga in the 17th and 18th centuries, are described, with particulars as to the ornaments, coins, beads, etc., found in them. Differences among tribes are discussed, and the subject is illustrated from articles in the museum.

Description of burials and finds in graves, etc. of the Sarmatian Kurgans, in northern regions of the Lower Volga about the 2nd or 3rd century A.D. Excavations made in 1930. Draws conclusions favourable to the Socialist state of an early pastoral tribe.

Finds of remains of post-Tertiary animals in the Lower Volga district. The island of Horoshenki, opposite Alexieff wharf, is particularly rich, and a list (in Latin) is given. The writer of this chapter considers that these finds and all they imply, have not been sufficiently studied by archaeologists. He says :—' suitably elevated places, absence of the later (post-cretaceous) deposits, abundant glacial and post glacial fauna, and finally complete absence of ice erosion—these are the fundamental conditions which must compel one, it is thought, to seek Palaeolithic man, if anywhere, in the neighbourhood of Hvalinsky '.

The volume concludes with notes on the most suitable photographic apparatus for museum and archaeological purposes. E.A.M.

Reviews

THE PERSONALITY OF BRITAIN: its influence on inhabitant and invader in prehistoric and early historic times. *By* CYRIL FOX, PH.D., F.S.A. *Published by the National Museum of Wales and by the Press Board of the University of Wales*, 1932. *pp.* 84, *with numerous figures and maps.* 2*s* 10½*d post free.*

The science of archaeology might well be defined as the study of the past distribution of culture-traits in time and space, and of the factors governing their distribution. For the plotting of extinct cultures in space-time the cartographic method, of which Dr Fox has here given so masterly a demonstration, is of the utmost value both for popular exposition and as an engine of research. An archaeological distribution-map not only exploits the most basic and common quality of all antiquities, *viz.* their geographical position, but by its very existence implies the co-ordination of scattered evidences and the establishment of a synthetic relation with their geographical background. Such a map does more than merely define the horizontal space qualities of a given trait or culture, it often gives the key to its own explanation. The visual argument, whether conveyed by an illustration, a map or a section, is (or certainly should be) the most potent in archaeological research or exposition.

To anyone who doubts the value of the distribution-map the reviewer can prescribe with confidence this work of Dr Fox's, furnished as it is with some of the most striking examples we have. By these maps, which reflect an important aspect of much of the known archaeological material of these islands from the Neolithic to the Anglo-Saxon period, the author is able to demonstrate in a peculiarly forceful and convincing way some of the main physical factors which conditioned human settlement in our prehistory. He shows how the broad outlines of our cultural history have been influenced by the geographical position of the British Isles in relation to the Continent and to the routes of trade and migration of prehistoric Europe. Perhaps the most striking of the examples which he quotes is the predominantly western distribution of megalithic culture in the British Isles, contrasting with the essentially eastern distribution of the Beaker cultures. Secondly he demonstrates the control exercised by the geological structure of the country upon such invasive cultures. Thus he distinguishes two main zones, the Highland zone of older rocks, and the Lowland zone of younger rocks, the former tending ever to absorb the alien influences which impose themselves upon the latter.

The value of this extensive view, of which Dr Fox is one of the foremost champions, must not blind us to the limitations of the geographical method when employed too naïvely. The archaeology of the British Isles has been worked out far more intensively for some areas than for others, and again the discovery of the objects from which distribution-maps are prepared has resulted in all too many cases from some economic activity, which is itself rigidly controlled by geology. These are factors for which allowance must be made especially in the interpretation of regional-surveys, but which have not in practice seriously impaired the value of the map method when applied to the country as a whole.

There is, however, a far more serious danger implicit in the use of maps which has not in the past always been fully appreciated by archaeologists. The point I wish to make is that, in so far as archaeological distributions are determined by geographical factors, they are determined *by the contemporary and not by the present* geographical environment.* But geographical environment is no more static than climate or plant life! In so far as there has been geographical change since the period with which he is immediately dealing, the archaeologist who assumes the present state of affairs as a background for his map is thereby vitiating the very basis of his evidence. It may be said at once that the degree of error varies greatly so as to be negligible in the case for instance of a chalk or limestone area at a fair altitude, but so as to be of overwhelming importance in the case of a low-lying region like the Fenland, especially when in proximity to the sea. In such a region as this it is not geography but palaeo-geography or geology, not horizontal but vertical space-distribution which becomes of foremost importance. The superficial geographical method will work only where geological change has not been active into relatively recent times.

But this factor of the transience of any given geographical environment is not confined in its significance to surveys of a regional character. It is fundamental to the broader issue of the relation of the British Isles to the Continent. For it must be clear that the factor of land-movement alone has at various periods either modified or completely eliminated that insularity of ours upon which geographers and politicians set so much store. Dr Fox has not been blind to the significance of this but it must be said with all deference that his paragraphs on changes of land-level and the inferences drawn therefrom (pp. 22–4) are open to severe criticism. Unless we are much mistaken there is an over-simplification or misunderstanding of the evidence which affects his inference rather seriously and in any case is liable to mislead his readers. To take an example, the statement on p. 23 that ' there is evidence that peat *began* to grow on the fenlands of East Anglia . . . which were formerly habitable in the Bronze Age ' is quite misleading. The evidence cited by reference in support of this consists of no more than a few unscientific records of finds made ' under peat ' and so on, the inference being that there is only one peat in the region. Yet away back in the seventies Skertchley's work showed that the problem was far more complex. Recent work indeed by the Fenland Research Committee has demonstrated the presence in parts of the fens of Late Boreal peats, comparable with the North Sea ' moorlog ', and the Skipsea peat (see H. and M. E. Godwin, ANTIQUITY, March 1933, p. 36), both associated with Mesolithic harpoons. This period of land elevation, corresponding with the Ancylus-lake phase of the Baltic which permitted the easy incoming of fisher-folk of Maglemose-Kunda affinities to southeastern Britain, was succeeded by the depression of Atlantic time, corresponding with the Littorina-sea phase of the Baltic, and indicated in the Fenland by the drowning of old river channels and the deposition of semi-marine silts. During this Atlantic period, as Swedish workers have shown, the land not only sank in relation to the sea as compared with the preceding Boreal period, but was actually considerably lower than is now the case. Since in Boreal times the southeast of Britain seems to have behaved in a similar fashion to the Baltic regions, the inference is that it acted similarly in the succeeding Atlantic period, and this is supported by the evidence accumulating in the Fenland. Furthermore, there is evidence for a slight re-elevation in sub-Boreal times, again in

* The necessity for reconstructing the geographical environment of any given period was pointed out in *Man and His Past* (Oxford, 1921), pp. 93ff.—EDITOR.

sympathy with the Baltic area, when river-channels were re-cut in the fens. It is to this period that the Neolithic and Beaker habitation of the submerged Essex coast is referable. In the Cambridgeshire fens this was in turn succeeded by a period of peat formation and it is in the base of *this* peat, found on the surface over wide areas, that the Early Bronze Age horizon is to be found. The post-glacial history of Britain is not therefore so simple as Dr Fox seems to imply ; and the Atlantic depression which affected the south-east of Britain is seen to separate the Boreal and sub-Boreal phases of land elevation, which he confuses as one. Contemplating the post-glacial history of this part of Britain, so important in any consideration of the formation of the British Channel, in the light of this evidence of oscillation we do not feel happy about Dr Fox's implication that the Channel was non-existent at so late a period as the Neolithic. It seems to us more likely that if not cut in the pre-Boreal or Yoldia period of land depression it must then have been formed in Atlantic times, and once formed the operation of tides would ensure its permanence, short of land elevation of catastrophic proportions. J. G. D. CLARK.

BYZANTINE CIVILIZATION. *By* STEVEN RUNCIMAN. *Edward Arnold*, 1933. *pp.* 320. 16*s.*

This is an interesting contribution to Byzantine research. Nor does it pretend to be anything else. The author has written twelve studies in Byzantine culture and history and made in effect a most useful and admirable handbook. His chapters vary in quality and interest. The first is concerned with history. As such it is difficult to read because of its compression, nor does this compression tempt the author into any pungency of style or brevity of statement : frankly the one dull chapter. The section on the administration of the Byzantine Empire is more interesting and is clearly the result of wide research, and the section on the Diplomatic Service is illuminating in its exposition of the subtlety and skill of Byzantine negotiations with foreign powers. The author quotes the saying of Constantine VII that there were three things which a foreigner should never be given—' a crown, the secret of Greek Fire and the hand of a purple-born Princess ' ; and the precept was rarely disregarded.

In his discussion on commerce the author gives us some important facts and judgments. The prosperity of Byzantine commerce was said by Cosmas the Sailor of the Indies to be due to Christianity on the one hand and to a standard coinage on the other. By Christianity he probably meant merely prestige, and was cynical enough to say so ; but it is interesting to see Christianity serving as a trade commodity. What Cosmas was hinting at also, is that Byzantine civilization implied certain valuable qualities in which every citizen of the empire partook. Those were more numerous than he mentions. Sound administration and a certainty of justice ; a common quality of citizenship which is briefly summarized as ' Christianity ' ; a careful control of internal production so that every citizen was interested in the promotion of trade, and a complete absence of hereditary claims to distinction. These were qualities which made Byzantine citizenship worth having and the barbarians with whom Byzantium traded were therefore envious enough to feel privileged to engage in commerce with such an enlightened land. The last factor, the absence of mere family claims to power or riches, was the most democratic of Byzantine customs. As the author says, ' Education not birth gave the entrée to Byzantine society '. But even the modicum of intellectual snobbery implied in such an outlook did not discourage them from selecting exactly what they wanted from the culture of their neighbours. ' They were passionately interested and inquisitive about the affairs of

their neighbours and were willing to borrow from the lore of the Arabs and the recreations of the West '. Little wonder that Byzantium constituted a centre of culture and comfort and wealth such as the world has not seen before or since. For on this basis they suffered from none of the economic ills so prevalent today, nor from the violent contrasts of class. There was too much of the ancient Greek still in their blood for them to tolerate the social and economic systems of ancient Rome. They still lived like an ancient City State, but with a population of a million within the mighty walls of their city.

So in war their strength consisted in adapting their methods and arms to the particular enemy who faced them. Their main principle was never to take the offensive except in counter attack and to employ every device besides military measures with which to outwit the enemy. Here again was a contrast with the flashing legions of Rome, and yet the Byzantine Empire was both greater and more cultured than the Roman, for it was an empire founded on intelligence and established for the benefit of the citizens.

But envious neighbours made this tremendous attempt at civilization both dangerous and difficult. The 8th and 9th centuries saw an almost continuous siege of this Utopia. Every Byzantine citizen of Constantinople in the 8th century was ordered to keep with him provisions to last three years. And culture and the finer emotions do not fructify under such a psychological strain. No wonder that the Byzantine was at times cruel and always a cynic. The charges of barbarism and cruelty so often made against him must be understood in the light of these facts. He was in a perpetual state of war. His outlook was always what our own was in say 1917 and 1918, with the same strain and the same outbursts of hysteria. Yet the Byzantine Empire stood for eleven centuries and ours is already rocking to its foundations. For the Byzantine had enormous energy and stamina aided by wit and intelligence. When his city fell the world fell with it.

Mr Runciman has done well to make so much material easily accessible. His chapters on Byzantine art and literature are, as he admits, too brief for the subject. They had been better omitted.

The following errors are noted. Anaximander is strangely assigned to the 4th century B.C. (p. 235); ' Steactite ' for steatite (pp. 257, 264); ' Skiprou ' for Skripou (p. 261 ; ' more unique ' (p. 262); the Barletta statue was not ' carved ', it is of bronze (p. 264); the Romanus and Eudocia panel is stated to be in both the Louvre and the Cabinet de Médailles, it cannot be in both (p. 265); ' Chalcondylas ' for Chalcocondylas, (p. 298). This is a large list for so small a volume.

Seeing that there are no illustrations and no type other than Latin is employed for the text the price of this book is high. STANLEY CASSON.

AN INVENTORY OF OBJECTS OF ROMAN AND PROVINCIAL ORIGIN found on sites in Scotland not definitely associated with Roman constructions. *By* JAMES CURLE, LL.D., F.S.A.SCOT., F.S.A. *Procs. Society of Antiquaries of Scotland*, vol. LXVI, 1931–32, *pp.* 277–397.

If each nation has its own way of treating its Roman antiquities, Scotland's glory must be her chroniclers. We already have General Roy's *Military Antiquities*, David Christison's surveys of hill-forts, Dr Curle's own list of native objects from Roman sites, and Sir George Macdonald's catalogues of Roman coin-finds. Now follows Dr Curle's second contribution, a valuable list of objects of Roman provenience, found dissociated from Roman sites. Side by side with these products of workroom and museum go the excavation-campaigns which have, to quote Dr Curle, ' recovered the

skeleton of the occupation ' of Scotland by Roman troops. All these activities have an intimate methodological connexion, because they round off, effectively and almost finally, one line of treatment of the problems which that occupation presents. The making of catalogues cannot be pushed further : the excavation-campaigns can and must be supplemented in detail, but the framework of the story revealed will not require substantial reconstruction. The foundations so well laid are now set firm ; and the method of laying them deserves the attention of all students of archaeology because it succeeded better and exhibits fewer inherent faults than any other pioneer's work on Roman military antiquities. This fact is too little appreciated, even by English archaeologists.

But every advance in knowledge contains within itself the germs of further development. Out of Dr Curle's inventory of ninety-nine objects, forty-five come from native sites that have been excavated, if with varied skill. Of these (we give their numbers because Dr Curle does not), twelve are brochs (1, 26, 78, 80–87, 92), eleven are hill-forts (4, 13, 15, 18, 25, 38, 42, 44, 61–63), eight are crannogs (33, 34, 37, 39, 45–47, 51), seven are souterrains (66, 68, 69–71, 89, 91) and seven are caves (9, 11, 35, 55–57, 75) : and we wish that they had been differentiated on the map. But every souterrain, all brochs but two obvious intrusions, and the last three of the hill-forts and caves lie beyond the Antonine Vallum. Thus, the first thing that this list emphasizes is the need for selective excavation of the hill-forts. One is glad to see that this has begun. Three of the hill-fort excavations belong to the last two years, and the new development is already under way. The need is urgent. It is self-evident that only an understanding of the native conditions can explain the reason, not so much for the experimental Agricolan occupation, as for the systematic reoccupations under the Antonines, who three times in half a century attempted to control the Lowlands in a ' strait-waistcoat ' frontier, which, excepting west Cumberland, was an improved copy of Hadrian's Wall, its arterial feeder-routes and its advanced posts. Why did the Romans consider it imperative to do this, and by what miscalculation did the scheme that succeeded so well on Tyne and Solway fail on the Forth and Clyde ? At the moment, no adequate evidence is to hand. But the other side of the story is suggested by the finds of *paterae*. These are peculiarly plentiful in Scotland, and since they formed, with metal cook-pots, a standard article of soldier's kit (Cichorius, *Trajan's Column*, scene v), the inference that they mark native successes is obvious. Some belong to the 1st century, in dealing with which we miss Haverfield's article on early inscribed examples (*Arch. Journal*, XLIX, 228–231), but many, especially in hoards, belong to the 2nd century, when the struggle was more intense.

Another interesting point which emerges is the distribution of certain types of dwelling, crannogs in southwest Scotland and souterrains in Angus. Both must have a story to tell, Angus perhaps in relation to Herodian's estimate of Caledonian habits ; while the fact that in southwest Scotland habitations extend only along the coast and the hinterland is empty, of both intensively inhabited sites and stray loot, might elucidate Agricola's neglect of the southwest.

On the north also, the map appears to clear up some dark points about the Roman policy. It now becomes evident that Ptolemy's *Caledonia silva* was impenetrable, and governed Roman frontier organization in exactly the same way as the Hercynian forest dictated it in Central Europe. Between the forest and the natural boundary—here the Forth–Clyde isthmus, there the Danube—the buffer-tribes were subjected to a loose control. Tribes beyond the forest did not interest the Government : but indefatigable merchants got there, just as in Central Europe ; thus the broch-folk received their wares, if irregularly, and mostly by sea.

This is the general picture of Roman Scotland that Dr Curle's inventory suggests. But the minor points deserve equal attention. The author's skill in dealing with small objects needs no advertisement. We admire the section on painted glass cups and playing-men (291–6) and on enamelled *paterae* (302–6) as examples of his work at its best. But the section on the preparation of native drinks (307–13) must head the list: Dr Curle has never done better than this. As a parallel to the chain-mail from Carlingwark, that from the Lexden tumulus, Colchester, is worth quoting. About this point in the text a reference to the Hallguards purse is missing, and it is perhaps worth note that not only does the angle of the Milsington bronze leg suggest an equestrian statue (325, fig. 27), but the foot was never fastened to a base and the heel has a hole bored for fastening a spur. In connexion with frontier commerce, the evidence for the regulation of markets might have been quoted (Tac. *Germania*, c. 41, *Histories*, IV, 64); and the gateway at Knag Burn is a single entrance with two doors and central doorway (Maclauchlan, *Memoir*, p. 93 and plan) between the guard-chambers; a rare type for its age, but paralleled at Malton. Demetrius of Tarsus was not merely an 'early Greek voyager', but accompanied an Imperial expedition. We do admire Dr Curle's englishing of what he saw, but wish that he had mentioned the long list of Scottish isles in the Ravenna Cosmography, as proving Roman knowledge about them; indeed, no survey of native conditions is complete without an estimate of what that document says. For the present high value of Scotch pearls (347) we would like to cite Professor Ritchie of Aberdeen (quoted by J. D. U. Ward, in *Countryman*, July 1932, p. 367); and apologise for not remembering until now *Collectanea Antiqua*, III, pp. 91–99, where a young seal-skin figures among presents from a British governor in A.D. 238. The capacity-measurements of the Dowalton *patera* are worth equating with Roman units, and work out as follows: the unit is the *cyathus* (Marquadt, *Staatsverwaltung*, II, 76) of 44.75*cc.*, and the multiples of it work out at 7, 8, 14, 14, 16, 12 and 12 *cyathi* respectively, the unit of one dozen being equal to the *sextorius* and the whole capacity being 79 *cyathi*. The greatest error is four per cent.

Misprints are few. We have noted *Enforschung* (313) and Epahroditus (372). The drawings of the Samian are in a tradition now confined to Scotland, which we cannot pretend to like. The map requires some slight correction. Gilnockie is a marching-camp and Burnswark is not. Castle Greg was more than temporary; and Carpow has a special convention to itself, whose meaning is unexplained. Further south, the road to Bewcastle is sound, with a signal-station on it, at Gillalees; Great Chesters is not so near Carvoran and the last letter of 'Chesterholme' is superfluous. Lastly, who will break the border convention, and bring 'Roman Scotland' up to Hadrian's Wall? The absence of the material between Tyne and Tweed is not only deplorable, but a real defect.

I. A. RICHMOND.

NOTES ON THE ROMAN FORTS AT OLD KILPATRICK AND CROY HILL, AND ON A RELIEF OF JUPITER DOLICHENUS. *By* SIR GEORGE MACDONALD, K.C.B. Reprinted from the *Proceedings of the Society of Antiquaries of Scotland*, 1931–2, *pp.* 219–76.

This overprint contains an account of work done by Sir George Macdonald at two forts on the Antonine *Limes*. Old Kilpatrick had been dug by Mr S. N. Miller in 1923–4, and Sir George himself in 1920 had done enough digging at Croy to prove

that there was a fort there. But these papers amplify and to some extent correct our knowledge in a remarkable way.

The conditions under which Old Kilpatrick was originally dug were as unfortunate as any that an excavator can meet. A town-planning scheme dogged Mr Miller's footsteps. He was forced to lay trenches when and where he could, and thus the results gained were to some extent less satisfactory than they might have been. A feature of the Report was the suggestion that a ' harbour-enclosure ' had been built at Old Kilpatrick prior to the construction of the fort : this enclosure, it was suggested would secure the convoy of troops and building material for the *Limes*. Sir George Macdonald had already pointed out the difficulties which were raised by this theory ; he doubted whether the Clyde was navigable in ancient times as far as Old Kilpatrick, and this point he now succeeds in demonstrating by a painstaking research among documents of the last three centuries.

But there is more than destructive criticism here. Sir George was fortunately able to do some excavation on land which was inaccessible to Mr Miller ; and while taking account of his predecessor's difficulties, he makes the remains tell a new and remarkable story. The fort and the Antonine Wall, he shows, were constructed by different parties, and as the wall-builders started at the eastern end, the fort was completed before they arrived. But its builders had proceeded in a strangely unintelligent way. They first dug their ditches without any regard to the line imposed on the Wall by the lie of the ground : they then remodelled them in such a manner as to lead the Wall up to the fort in the middle of its north wall, and they had commenced to dig a length of wall-ditch on this undesirable alignment. The wall-builders, when they arrived, filled up the abortive wall-ditch and took the Wall up to its proper point of junction at the northeast corner of the fort. A similar lack of co-ordination is revealed by the lay-out of the Military Way. The story is a strange one, but it is established by a really wonderful process of archaeological inference, subtle and profound, yet absolutely certain.

Furthermore, examination of the length of wall running down from the fort to the river leads the author to revive an old theory of Horsley's—that the Military Way was prolonged beyond the end of the wall. He takes it, in fact to Dumbarton where there have always been adequate harbour facilities. But at some period in the history of the *Limes* this extension was closed and Sir George Macdonald offers the suggestion that the Irish pirates were already making sea-communications unsafe. His case may be indeed stronger than he recognizes, for the Irish annals assign the first invasion of Scotland by the Ulstermen to a date within this very period.

Space forbids us to say much of the discoveries at Croy Hill. Reconnaissance rather than complete excavation was the aim ; yet the results are very full and interesting. The size of the Antonine fort was made out ; it is small—an acre and a half—about the size of Rough Castle. The exterior bath-building was located, and a mysterious pit—perhaps a well—beneath the northwest angle-tower was dug out. But most interesting was the discovery of an Agricolan fort on the site. It was about the size of the Agricolan fort at Bar Hill, and had, like it, an annexe. Curious features were its shallow palisade trench and absence of ditch.

During the excavations at Croy Hill a fragment of a sculptured stone was found with part of an inscription to Jupiter Dolichenus. The author discusses it in the third paper, and with the aid of continental parallels he is able to assign it to a rare type in which Jupiter on his bull is accompanied by a female consort. C. E. Stevens.

THE GREAT WALL OF HADRIAN IN ROMAN TIMES. *By* PAUL BROWN. With drawings, plans, and oddments by the Author and Constance Whyte. And a foreword by PARKER BREWIS, M.A., F.S.A., *and* ERIC BIRLEY, M.A., F.S.A. *pp.* 162. *With* 4 *plates, various plans and diagrams and* 29 *drawings in the text. Heath Cranton,* 1932. 5s.

That the public is interested in Hadrian's Wall is apparent to anyone who sees the row of cars drawn up at the footpath to Housesteads fort. It is to this public that Mr Brown offers his book. With the aid of archaeological material its aim is to reconstruct the buildings of the Wall and the life that was led in and around them. The book is not intended for specialists ; yet the specialist can read it with advantage, and the name of its sponsors, Mr Brewis and Mr Birley, guarantee its historical accuracy. The pencil aids the pen in recalling to us the Wall as it was : there are reconstructions of typical forts as Housesteads and Chesters, of milecastles and turrets, while inset drawings are given of tombstones, altars, fibulae and the like. The reconstructions are good and valuable but the inset drawings are far too small and smudgy. And a book which is meant to be taken on the Wall ought surely to have a map.

This is a useful and desirable book which deserves the second edition that it will pretty certainly get ; so it seems worth while to notice a few mis-spellings and mis-statements. I have observed *Liniam* in the preface, *Platorious* (p. 25), *Clarantinus* (p. 46), *Balista* regularly, *Mythric* and *Mythras* (p. 93). The Vexillation that did quarrying work at the Gelt was certainly not a Vexillation of Auxiliaries, and the inscription cited by Mr Brown shows as much ; Mithras was not worshipped with human sacrifice ; Birdoswald fort is not a Cavalry fort, and did anyone ever suggest that the Turf-Wall was Severan ?

Finally there are two mis-statements a little more serious. Mr Brown asks whether the purpose of the Wall was achieved or not, and he advances an argument on either side : but neither of them is decisive and neither of them is correct. It is misleading to assert that the wall-ditch is unfinished, for it is nowhere absent except where natural conditions render it unnecessary ; and when Mr Brown declares that ' the tenaciously held idea of hordes of natives being unable to withstand the disciplined Romans ' has been overthrown by archaeology, he is inverting the facts. Bruce and the older writers were quite prepared to believe in these continual defeats of the garrison ; it is archaeology that tells how only in the ' barbarica conspiratio ' of 367 was the Wall taken in fair fight. When it was sacked at other times, its garrison was away. C. E. STEVENS.

THE EARLY AGE OF GREECE. *By* WILLIAM RIDGEWAY. *Vol.* II, *edited by* A. S. F. GOW *and* D. S. ROBERTSON. *Cambridge University Press,* 1931. *pp.* XXVIII, 747, *and* 158 *illustrations.* 30*s.*

It would be difficult to understand the importance of this volume, now posthumously published, without a consideration of the discoveries in Aegean archaeology which have been made since Ridgeway first published his main thesis upon the Mycenaean world in 1896. Mr Wace's excellent introduction both summarizes the progress of discovery and estimates the permanent elements in Ridgeway's work. What emerges is that Ridgeway, with the foresight of genius aided by a balanced view of evidence rarely met with, laid the real foundations of what are now the current views generally accepted upon the position of Mycenaean culture in the ancient world and its relation to the civilization depicted in Homer.

Ridgeway was the first to make a clear distinction between the Mycenaean world as such, which he claimed was essentially indigenous, and the changed character in it which was brought about by Achaean intervention and infusion. That he was the first to claim that Greek had been spoken when the Mycenaean world first began to differentiate itself from mere barbarism was, when he postulated it, a heresy of the first rank. A heresy it remained until very recent times, and only in the last ten years has the learned world begun to agree with some appearance of unanimity that the inhabitants of Greece from about 2000 B.C. were of Greek stock and spoke some primitive form of the Greek language. Ridgeway's first contribution, that did more than any other to clear the air for further research, was his firm decision that the Mycenaean world as revealed by Schliemann could not possibly be equated with the world of the Homeric Achaeans. His further thesis that Achaeans were actually of a stock which it is difficult to differentiate from Celtic is also beginning to receive some semblance of acceptance. The most recent views indeed on the distribution and chronology of bronze swords of the type which entered Britain and Ireland soon after 1000 B.C., make it difficult to deny that the general European diffusion of the culture which they represent does in fact correspond to some kind of Celtic diffusion from central Europe.

The homogeneity of Mycenaean culture based on a purely mainland origin was another development of research which has its springs in Ridgeway's main theories. Most excavators of Greece now agree on a view which is no different from that which he formulated, and the minor divergence between those who would attribute more Cretan influence and those who would decry its importance in mainland development is a dispute which is a necessary development from Ridgeway's theory, rather than a contradiction of it. Nor is it an antithesis which affects the main issue.

To Ridgeway and to no one else must be given the credit for clearing the air of absurd theories as well as for laying down main outlines which would help later scholars. That the culture found by Schliemann could have been considered, as it was at the time of its discovery, as Hellenic of the First Olympiad (as A. S. Murray maintained), as purely Achaean or Homeric as Schliemann thought, or as barbarian Gothic, as was maintained by some ultimate back-benchers, showed clearly enough that an impartial mind endowed with a fine sense of evidence should at once attempt to clear away the cobwebs. It is difficult now to realize the real service which Ridgeway rendered in this, nor is it as clearly realized that Ridgeway enjoyed the supreme merit of seeing his views (which after all were mainly formulated in the study) largely supported by the independent discoveries of successive generations of excavators.

This second volume contains naturally much that is out of date and much that is superfluous, now that the smoke of earlier battles has blown away. But the reader should rather concentrate on those matters in which it has contributed directly to later beliefs. What Ridgeway proposed as theory is now largely knowledge. His insistence on the importance of the Danube basin to any knowledge of Bronze Age Greece, and of a certain community of style and outlook in European Bronze Age culture with that of the Mycenaeans, had not indeed received the full illustration that it deserved until Prof. Childe and Prof. Vasile Parvan gave the facts which suffice to illustrate the community in question. Ridgeway's perpetual delving into Irish and British archaeology to illustrate his broader views on European connexions with Greece are explained by the fact that, when he wrote, the material nearer the centre of observation was simply not available. Subsequent Danubian research does nothing to detract from his main views. The Achaeans must be looked for in the regions from which he believed them to come, and

every fresh discovery in Hungary or Transylvania merely emphasizes the correctness of his far-sightedness.

Ridgeway's views on the Iron Age have, since he wrote, been considerably modified by later research, and considerable advance has been made in recent years in the matter of proto-Hellenic discovery. On the Pelasgians too his views were unsatisfactory, but it must be admitted that the term Pelasgian means no more and no less than when he first made it into an archaeological term.

The first volume dealt with the solid material facts which he used to support his theories. The second volume brings into play the anthropological and sociological arguments and concludes with a deeply interesting study of the Heroic Age in Ireland, in which he draws invaluable comparisons between Celtic and Achaean modes of life.

The editors are indeed to be congratulated upon publishing the conclusion of a great work which has done more to clarify the whole problem of the pre-Hellenic world than the work of any other scholar.

S. CASSON.

PALÉOPATHOLOGIE ET PATHOLOGIE COMPARATIVE. *By* DR LÉON PALES. *Paris : Masson et Cie.*, 1930. *pp.* VII, 352, *with* 63 *plates.* 120 *fr.*

The beginnings of palaeopathology date back about 150 years, the earliest observations being those of Jean-Frédéric Esper in 1774. During the first 100 years quaternary fauna formed the main subject of study ; from 1870 to 1900 attention was focused on injuries of the human skeleton and the problem of the origin of syphilis ; during the present century the study has turned more especially towards the infections and the evidences of prehistoric therapeutics and surgery. The vast material accumulated as the result of these researches consists of specimens exhibiting pathological changes the nature of which is in some instances recognized without difficulty—for example, fractured bones showing evidences of vital reaction and healing. On the other hand there are numerous specimens, mostly exhibiting marks of acute or chronic inflammation, the exact nature of which is difficult to determine or is open to more than one interpretation. Much of the literature is concerned with the discussion of these difficult cases, inducing a tendency to rivet attention on particular specimens or particular diseases rather than on a general survey of the subject. The material now accumulated is, however, sufficient in amount and variety to enable a fairly comprehensive survey to be made of the diseases incident to the ancient races. Dr Pales has made the attempt in his book, and it is, apparently, the first of its kind that can lay claim to any great degree of completeness. He has drawn up a list of recognized modern affections of the skeleton, to which, naturally, the subject is almost entirely limited, and with the aid of a critical examination of records and existing specimens has endeavoured to show how far each class of disease is represented in ancient remains. His classification includes malformations, nutritional changes of various kinds, injuries, affections of the teeth, osteo- and rheumatoid-arthritis, myositis ossificans, non-specific infections, syphilis, tubercle, osteoporosis, and various types of tumour-formation. The grouping of existing observations under these headings has involved the analysis of nearly 700 publications, besides the personal examination of collections, and although in a work of this magnitude omissions are almost inevitable, they will probably be found to be few in number. It may be of interest to mention here that a specimen of the bones of the foot dating from the 26th dynasty and exhibiting the characteristic changes caused by mycetoma (a disease not included by Dr Pales, and akin to actinomycosis) is preserved in the collection of the Royal College of Surgeons, London. The matters discussed under the above-named headings relate to the discovery

of the specimens and to the opinions of authors in cases of doubtful interpretation. Thus, as a review of work already achieved, the treatment of the subject is mainly historical but in some instances causation is also discussed, as in the varying distribution of disease of the temporo-maxillary joint and its relation to manner of eating. Due consideration is given to the important question of chronology, the three classes of fossils, Egyptian specimens, and pre-Columbian remains being separately dealt with in discussing the matters referred to. Dr Pales's book will certainly prove of value as a work of reference on points relating to the present position of the science of palaeopathology, and it contains a very interesting résumé of the history of the science and an extensive and apparently complete bibliography. The work, it should be explained, is in no sense descriptive of the diseases dealt with, as is the case in ordinary textbooks on pathology, and is not designed to give instruction in the diagnosis of the various pathological conditions that are met with. T. W. P. LAWRENCE.

THE MESOLITHIC AGE IN BRITAIN. *By* J. G. D. CLARK. *Cambridge University Press*, 1932. *pp.* XXIII, 223, *with* 2 *maps and* 60 *figures.* 15*s.*

Archaeological interest at the present time is centred in the Mesolithic Age. We may therefore congratulate Mr Clark on giving us a connected account of the relevant finds relating to England ; as yet this has been done for no other country. The author first explains the technical terms (pp. XIII–XXIII), and then in his Introduction considers the problem of naming the ' Mesolithic ' Age, concluding that this is still its most fitting title. But, as Breuil has observed, from the commonsense point of view the term ' Mesolithic ' really applies best to the Upper Palaeolithic Age, and in fact only tradition prevented him from proposing a change in the accepted terminology. If, as Mr Clark himself admits, the ' Mesolithic ' cultures are the ' heirs ' of the Upper Palaeolithic, then it is scarcely apposite to bracket them together by a name which would appear to give them an equal value, as a phase of human development, with the Lower Palaeolithic, Upper Palaeolithic and Neolithic cultures. I do not dispute that there is a definite cleavage between the Upper Palaeolithic Age proper and the ' Mesolithic ' ; but, as has been established more clearly since the appearance of my book on the Stone Age, this view is based primarily on the fact that the first Neolithic forms emerge as members of the ' Mesolithic ' cultures, in particular that of the polished axe, which is now established at a station at Göteborg as having definite early Mesolithic relationships. On these grounds it appears to me only right to apply the term ' Epipalaeolithic ' (or ' Epimiolithic ', on the proposed terminology of my book) to the ' Mesolithic ' Age.

Chapter 1 reviews briefly the Mesolithic period in Europe, in which account the author follows in essentials my suggested divisions. Anthropological questions follow. Mr Clark is perfectly correct in stating (p. 12) that I connect the Mughem men with the Grimaldi and Bushman types, treating them as pygmoid (not as pygmies). But in that I do not differ from Boule, who holds that the Mughem peoples are proto-Mediterranean. For I believe also that there is a close connexion between the Epipalaeolithic dwarfish folk of the Mediterranean basin and the Mediterranean race (*v.* ' Weltgeschichte der Steinzeit ', p. 589). In chapter 2 there is a short description of the Azilian and Maglemosean finds in England, already treated at length by Miss Garrod in her book. Chapters 3–5 form the body of the book, with their notable account of the English microlithic finds. The author divides them into two main groups, according as they are outside the influence of axe-culture or are influenced by it. The latter group is confined to a belt in southeast England, somewhat eastwards of a line from the Isle of Wight to the

Wash. Mr Clark further separates from this belt a district roughly south of the Thames and east of a line from Portsmouth to Reading.

According to Mr Clark, the cultural groups which developed outside England were, as a rule, not long in reaching it, yet their development in England was usually localized, owing to its insular isolation. This can be proved for the Azilian period, but is still clearer in the case of the microlithic cultures with their very rich remains. The earliest of these appears to be a facies which corresponds to the Zonhoven culture of Belgium. The author agrees with the Brussels school in viewing this culture as early Tardenoisian ; but I prefer the Liège theory which regards it as a transition from Magdalenian to early Tardenoisian. The Zonhoven culture was followed by influxes of Tardenoisian (Mr Clark speaks of ' middle ' Tardenoisian, but ' early ' would suit my view better) ; these first brought geometric flints to England. A late Tardenoisian culture developed locally, closely connected with older native elements, which is distinguished from the continental type by the rarity of trapezoid flints. The absence of a late Tardenoisian period with geometric types is particularly noticeable in the belt south of the Thames. Its place was taken by an industry with microlithic points and axes, whose edge is produced by tranchet blows. Tranchets, picks, and certain other types betray Campignian influence, which must go back to a comparatively early period. Mr Clark considers that there is no evidence of pure Campignian in England. Here I note no mention of Mr R. E. Nicholas' book *Record of a prehistoric industry in tabular flint at Brambridge and Highfield near Southampton*, published in 1916. I investigated these finds at the Southampton museum in 1922, and concluded, both on typological grounds and from actual stratigraphic facts, that we have here a late Campignian culture unrelated to any microlithic influence.[1]

Seven appendices to the text deal with some interesting side-problems. Among these I would single out an investigation into the question of the micro-graver, which the author holds to be a waste-product, and also the discussion of the English flint mines for which, according to Mr Clark, there is no palaeolithic evidence. The book is distinguished by thorough working-up of material, mature judgment, and a clear view of general aspects. It is of fundamental importance also for the problem of the Mesolithic Age outside England.

O. MENGHIN.[2]

EARLIER HISTORICAL RECORDS OF RAMESES III. University of Chicago Oriental Institute Publications, vol. VIII : Medinet Habu. *Chicago*, 1931–2, *2 vols. folio. £7 10s 0d each volume.*

This magnificent publication by the Oriental Institute of Chicago makes fully available for the first time one of the most important monuments of Egyptian history. Plates only are issued as yet, with a short ' foreword ' by the Director, Dr J. H. Breasted, and an introduction by the Field Director, Dr H. H. Nelson, giving a full account of the site of Medinet Habu, its architectural history, an appreciation of the temple sculptures, with notes on their technical peculiarities (which are of great interest) and a description of the procedure of photographing, drawing, and verifying the plates now published. These, it is interesting to note, have been printed at the Chiswick Press (except those

[1] Cf. C. Cooper King, 'Discovery of a flint implement station in Witmoor Bottom near Sandhurst'. *J. Anthr. Inst.* 1873, II, 365. [The book in question deals with a purely imaginary industry in tabular flint, but also contains accounts of other finds. It is to the latter, we imagine, that the reviewer refers.—EDITOR].

[2] Translated from the German by Roland G. Austin, University of Glasgow.

in colour, which come from Berlin), and are a revelation to those who have had to work on photographs or drawings only.

The temple of Medinet Habu is even now the most complete of its kind ; quite a considerable part of the outer wall has its cornice, and even the great towers of the façade is preserved well above the principal frieze of reliefs, and one of them displays part of an upper one. Though some sections of the sculptured wall surface have suffered from erosion, most of the more important scenes are almost intact, showing even, here and there, faint corrections of the design, and craftsmen's errors of reproduction from the original sketches, and slips of the painter's brush.

But it is the subject of this wonderful war-monument that gives it unique interest. Egyptian kings are sometimes held up as examples of inordinate pride and lavish misuse of wealth. If ever a monarch turned the course of history, and deserved that his courage and skill should be commemorated, it was Rameses III. The crisis of his reign came in its early years, and we are not here concerned either with the palace scandals, or with the thoroughgoing reform and reconstruction of temple-foundations, of his later years. His father Setnekht, a soldier who had married a granddaughter of Rameses II, and may have been himself of the same royal line, put an end, a little before 1200 B.C., to the anarchy into which Egypt had fallen in the last years of the 19th dynasty, and after a very short reign, probably not more than a year, was succeeded by Usermare Meriamon, his son, under the throne-name of Rameses III. Besides internal disorders, Libyan tribes were flocking into the Western Delta, as they had attempted to do a generation before. Now, as before in Merenptah's reign, they were reinforced by what Egyptians described as the ' Peoples of the Sea ', some of whose names suggest that they came from the Aegean and southwestern Asia Minor, and whose coastwise attack on the Delta was concerted with the Libyan invasion. In 1194 B.C. Rameses III defeated this formidable combination utterly ; the town nearest the battlefield was renamed in honour of the ' scourge of Libya ', the western frontier was refortified, and in Egypt itself ' a woman might walk with her veil raised, as far as she wished, without interference '. Three years later, a similar danger loomed up, but on the eastern front, after all Syria and Palestine had been devastated by the ' northern invaders '. Again Rameses saved Egypt by skilful combination of land and sea forces, and settled the survivors of this mass-migration in the frontier district which thenceforward is known as Philistia. Another Libyan War, in his eleventh year, seems to have been a smaller affair, but no less skilfully handled. For the precise details of these events—already known, of course, from earlier publications of the narrative of the great war-monument at Medinet Habu—we must await the revised text and commentary. But with the graphic sculptures of battle scenes and long files of prisoners, we are enabled to reconstruct much, and in particular to appreciate the skill with which Egyptian artists rendered the various costumes and physiognomy of foreign peoples.

J. L. MYRES.

THE EDWIN SMITH SURGICAL PAPYRUS : published in facsimile and hieroglyphic transliteration with translation and commentary, in two volumes. *By* JAMES HENRY BREASTED. University of Chicago Oriental Institute Publications, vols. III–IV. *Chicago*, 1930. 2 *vols*. £4 10*s*.

The archetype of this document appears to have been written in the Pyramid Age (3000–2500 B.C.), but the extant papyrus is of the 17th century B.C., and unfortunately only contains the earlier part of the treatise ; the scribe having apparently been interrupted

when he reached page 17, and having resumed work with a much less important manuscript before him, a collection of charms and prescriptions (like those in the Ebers and Hearst papyri), which he copied on to the back of his manuscript. But what is preserved is among the most remarkable treatises of all antiquity, the first known record of anatomical study and surgical skill.

It hardly needs to be repeated that belief in magical remedies for human ills is not incompatible with accurate observation of natural objects, careful record of natural processes, in health and disease, and accumulated experience of the effects of manipulation and drugs. Sometimes in simple societies the two methods of treatment are combined, and it is difficult to distinguish the scientific from the superstitious elements. But if it be a mark of advanced civilization so to distinguish them and not merely apply them separately but dispense with the magical in describing the scientific treatment, this first surgical case-book surely ranks very high.

The cases which are described and discussed are thirty-eight in number (the last being incomplete) and are concerned with damage to the head, neck, arm and breast; no doubt the lower limbs and viscera were considered subsequently. Each begins with the diagnosis—' if thou examinest a man having . . .' and directions for examining the injury; then a definition of the case, and the surgeon's decision, ' an ailment which I will treat ', or ' an ailment with which I will not contend ' but leave to natural processes; and then directions for treatment, or for leaving things alone—' his treatment is sitting, until he gains colour ' and the like, sometimes with provision of supports of crude brick to maintain the favourable posture. Some of the surgical terms were already archaic when this copy was made, for there are explanatory notes; ' . . . it means that he says . . . ' and so on. The remedies are simple and familiar; swabs of linen, bandages, pads, and stitches; grease, honey, ' something hot ', and occasionally ' fresh meat ' on an open wound in the first instance. The queer phrase ' thou shouldst put him at his mooring stakes ' is explained as meaning that his diet and treatment are to be regular, till he recovers.

What are conspicuous throughout are the keen observation, sound knowledge of anatomical detail, recognition of feverish and septic conditions, and of local or general paralysis, reliance on natural processes of recuperation, and recognition of injuries too serious for curative handling. Even in the last-named, however, the patient is given ' first aid ' and the most favourable conditions for the offchance of recovery.

No less interesting to philologists are the many technical uses both of common and of archaic words, the latter going far to date the original composition, as the glosses to support the evidence of script for the age of this copy.

As editor, Dr Breasted has had the help of a medical colleague, Dr Arno B. Luckhardt, who has called attention to many anticipations of later anatomical and medical knowledge, and enabled the ' general reader ' to appreciate the skill and scientific outlook of this early Egyptian surgeon. Though the cause of the injury is usually not stated —an exception is where a man has broken his neck by falling on his head—most of the cases are such as would result from violent blows, either in war, or in the severe corporal punishments often depicted in Egyptian labour scenes. We may compare the frequency of broken heads and broken fore-arms (raised to ward off a blow) among the predynastic people; and Dr Breasted has fitly supplemented his text with photographic reproductions of damaged Egyptian skulls, wounded mummies, and the like. On plate VII, 13, the fatal wound in the frontal bone ' with indications that death was not immediate ', may have been due to a mace-blow, but looks as if it had been treated by trepanning, in the

rather rough fashion still practised in Algeria and described by Capt. M. W. Hilton-Simpson (*Arab Medicine and Surgery*, Oxford Univ. Press, 1922).

The make-up of these handsome volumes is worthy of the traditions of the Oxford University Press, and the plates of the skill and taste of the firm of Emery Walker.

J. L. MYRES.

EARLY MUSLIM ARCHITECTURE: part I. Umayyads (A.D. 622–750). *By* K. A. C. CRESWELL, with a contribution on the Mosaics of the Dome of the Rock and of the Great Mosque at Damascus *by* MARGUERITE VAN BERCHEM. *Oxford: Clarendon Press*, 1932. *With* 81 *photographic plates*. 10 *guineas*.

The first volume of Captain Creswell's long expected work on Muslim architecture emerges in distinguished form and notable dimensions. It more than fulfils our hopes and expectations and justifies its dedication to King Fuad, the worthy patron of all intellectual and scientific research in Egypt.

The author's original intention was to write a history of Muslim architecture in Egypt. He soon discovered that the dependence of that school on Syria was so intimate that it was necessary to begin at the earliest age of Islam and lay the foundation of his structure beyond the boundary of Egyptian activity. The material thus accumulating on his hands was so voluminous that it became necessary to deal with it in a preliminary volume containing a description of monuments, wherever existing, that date from the first three centuries of Islam.

Creswell divides his work into three parts, dealing respectively with the Umayyads at Damascus, the early 'Abbāsids at Bagdad, and the Tūlūnids in Egypt. Part I includes the first two (A.D. 622–935) of Leone Caetani's five chronological divisions of the history of Islam down to the Turkish conquest.

The arrangement followed is strictly chronological. Each monument in its turn is described and illustrated with plans, sections, and details. A remarkably full bibliography follows each section and the items of it are likewise chronologically arranged, enabling the student to determine at a glance how much weight should be given to each authority cited. It should also be observed that the photograph-plates are taken uniformly to one scale.

The book begins with a well-told account of the life and doings of Muhammad, of his house at Medina and of the rudimentary arrangements for prayer and the business of life. The growth of the movement from such small beginnings is lucidly explained and we are thus introduced to the earliest mosques at Kufa, Basra and Medina, and the first mosque at Jerusalem—their building and rebuilding. The Arabs possessed only the most rudimentary ideas of building, the bulk of the population being mere Bedu nomads. In early days they were largely dependent on converting churches to the use of the new religion. It was not till the time of al Walid or Abd al Malik that mosque-building was seriously undertaken, Sassanian, Syrian or other local architects being employed.

We are thus brought to one of the main portions of the book—that dealing at length and in great minuteness with the Dome of the Rock, every authority being employed, the author's conclusion being that it is a thoroughly Syrian building with Byzantine decoration. This part of the book is richly illustrated as is the part that follows, which deals at like length and minuteness with the great Mosque at Damascus. The author,

I think, satisfactorily proves that this mosque, the most famous in the world of Islam in its day, was not a converted church, but was built (in A.D. 705) by skilled craftsmen brought together from all quarters—Egyptian, Byzantine, and so forth; the mosaics, dating from A.D. 715, came from Constantinople.

Considerable space is devoted to a thorough examination of all that can be learnt now about the mosaics from inscriptions and writers. Those that adorn the Dome of the Rock were the work of Syrian Christians. Moreover a great quantity of *tesserae* were obtained by stripping mosaics from churches, as Charlemagne carried off Ravenna mosaics for use at Aix-la-Chapelle. The mosaics of the Dome of the Rock, the earliest great monument of Islam, receive and deserve the close and lengthy attention here bestowed upon them. All students in future must base their studies upon the material collected by Miss M. van Berchem and Capt. Creswell. The mosaics of the Dome of the Rock are discussed as to their composition, their decorative motives, their technique, and their present condition. The Dome is the earliest great monument of Islam. Its decorative scheme results from the meeting of two currents: the Greco-Roman and the Oriental. The first is of chief importance, being full of creative fantasy. It should however be borne in mind that none of the contemporary Christian works of like character have survived for comparison. Syria at this time had a strong school of art independent of Byzantium.

It has always to be remembered that the Bedawin suffered from a kind of claustrophobia. They hated confinement in towns and had a yearning for the open spaces. The Umayyads were always Bedawin at heart. Some of their earliest buildings, small monuments lying out in the desert southeast of Amman, were camp-centres on or near old trade-routes.

A chapter is devoted to a discussion of Pendentives. The Dome was known in very ancient times. A builder's problem was how to fit a circular dome on to a square base. Already in the 2nd century A.D. the true solution had been found in Syria, whereof examples still exist. We are thus led to consider the early mosques at Ramla and Aleppo, the latter containing mosaics like those at Damascus, but they are lost. The history of the minaret is adequately described. Joggled voussoirs are incidentally considered and they are ascribed to a Ptolemaic origin.

An important chapter is devoted to Mschatta, which has suffered serious pillage by local builders. Sculptured fragments exist in many village houses. The construction of the Hijaz railway was responsible for much pillage of all monuments near by for the construction of stations, culverts, etc. Creswell thinks that Mschatta was never completed. He ascribes the sculpture to Copts working in two groups penetrated by Persian influence.

Creswell's general conclusion is that all surviving examples of early Muslim architecture are in Syria with one exception. Their mosques have gable roofs, demanded by climatic conditions. Christian architecture dominated pre-Muslim Syria, but in such Muslim monuments as the Dome of the Rock late Sassanian motives appear alongside of classical forms. This was due to the conscription of labour on a large scale from all parts of the Muslim Empire. Thus the traditions of Syria, Persia and Egypt became mixed together and controlled by the Bedawin instincts of the rulers.

What has thus been written by the reviewer is not intended to be an abstract of the book but rather a finger pointing to a part only of the quantity of important material which the author has gathered together. He has thus cleared the ground for his approach to the main subject of his researches—the history of Muslim architecture in Egypt.

We shall look forward with keen expectation to his coming volume or volumes, which will doubtless maintain the high level of research and exposition reached in the first volume, which deserves all the praise it is receiving. CONWAY OF ALLINGTON.

'UP FROM THE APE'. *By* ERNEST ALBERT HOOTON. *New York: The MacMillan Company*, 1931. *pp.* XXVIII, 626 *and* 58 *illustrations.* 5 *dollars.*

I wonder if this book will appeal strongly to Professor Hooton's fellow experts. The style is bold and arresting—of the lecture room rather than the library—but such captions as 'Herr von Heidelberg: who fought without biting' do take one by surprise at this distance from Hollywood. Even should experts frown (and I do not think they will) there will be a very wide and thankful audience among laymen, and it is perhaps natural that one of us should attempt a review.

In the first place, what a relief it is to find someone who is not anxious to explain either himself or his grandfather. The all-conquering Nordic, the persevering and successful Alpine, and the brilliant, adaptable Mediterranean are put in their proper places. The ordinary mongrel is left with the comforting promise of hybrid vigour.

We are justly warned off the 'bed-time stories of the anthropo-geographer'. Professor Hooton is content, generally, to allow his facts to speak for themselves, yet here and there one feels he may not have gone far enough in this direction.

The 'stodgy Alpine race', for example, is said to dislike adventure on the high seas. Before one can adopt seafaring ways, however, it would seem necessary to acquire a seaboard. Generally speaking, the careful array of fact, the dispassionate, if lively, comment, and cautious summing up make one feel that we have found what we want for ourselves and our equally busy youngsters. And it is a profoundly interesting story.

We start with Man's Relations in part I. It seems simple stuff, but you will be sorry later if you skip it. Part II, on the Primate Life Cycle, is divided into twenty odd parts. Take the titles of some of them:—scrambling, breathing, hearing, climbing the family tree, smelling and handling, sitting up and looking around, becoming erect, making things, thinking, talking, growing and shedding hair. And again in part III, being born, growing, getting married, having a baby, bringing up a family, getting old and dying. Could any outline touch us more closely? Part IV, Fossil Ancestors, is the clearest and most entertaining summary I have seen. It ends off naturally in the family tree, which would have been the better for a time-scale. I wonder if the astronomer, geologist and anthropologist will ever realize how difficult it is for the average man to readjust his sense of time. Then comes the best wine last; contemporary races, what they are, how they developed, and their evolutionary meaning. Here we find broad classification rather than detail. For example, that interesting, fairly homogeneous and widespread African family, the Bantu, get two or three sentences only.

Dinka and Bahima are in one pigeon hole, Corean and Cantonese in another. How annoyed these strange bed-fellows would be. I suppose that as we get to know peoples better we tend to mix up race with many other factors, and that the sense of loss one has on consulting the expert is good for us.

The illustrations are admirable. The camera lucida drawings of skulls and the photographs of primates are of the highest class. The racial type photographs are good too, and perhaps the more so because some of them are so unexpected. It is wholly in the spirit of the text that we should be given such an odd trio of Nordics, but it is surprising to find a Singhalee illustrating the Australoid strain and an Irishman as an

East Baltic type. The benevolent pair of Ainus I have met before, although admittedly in different hats, as monks of the orthodox church.

So much for the first reading of a book which occupied very happily the whole of a journey from London to Rome and back again. I strongly recommend other ' men in the street ' to spend the necessary 5 dollars, and I have no doubt whatever that they will get the same advice from the expert.* H. St. J. L. W.

ANCIENT OIL MILLS AND PRESSES. *By* A. G. Drachmann. Archaeologisk-Kunsthistoriske Meddelelser. Vol. I, part I. D. Kgl. Danske Videnskabernes Selskab. *Copenhagen*, 1932. (In English).

The publication of an archaeological periodical by the Kgl. Danske Videnskabernes Selskab is an event of some significance and it is of particular interest to find the first number dealing with the archaeology of an industrial process.

Mr Drachmann is too modest when he says (p. 127) ' To us the press is only a small part of an obscure subject among many in the Roman antiquities '. The subject is only obscure because it has been for so long the custom to neglect the study of the technique of early industries. After all, the ancients depended on the press for the supply of two of the necessities of their life. One reason for the lack of interest in ancient industrial methods is the inherent difficulty of the subject ; another is the fact that until comparatively recent years the mechanical arts, with the exception of architecture, have been considered too humble to merit attention. It is much to be hoped that this substantial paper will be followed in the new Meddelelser by others dealing in a similarly thorough way with the plant and processes of other industries.

Although no monograph has previously appeared on the subject of oil mills and presses in antiquity, these machines have obtruded themselves upon the unwilling notice of editors of the agricultural writers, of Pliny, and of Hero of Alexandria. Archaeologists have also found their remains in great numbers, and have described them according to their lights. Mr Drachmann's way of dealing with his predecessors is nearly ideal ; where they are wrong, he corrects them without asperity, although with the reservation that ' it is impossible to correct every silly notion that has been put on paper '. The book is addressed primarily to those making a special study of this and kindred subjects, but is not without interest to archaeologists in general, especially to those working on sites where trapetes and presses are likely to be found.

There are a few criticisms to make. The commentary on Cato's descriptions of trapetes, though clear and conclusive enough, is made confusing for English readers because Roman digits are throughout called ' inches ', and the sign ' is used in dimensions to indicate *digits* and not English inches '. Anyone consulting the book to find the dimensions of trapetes would be led astray by this peculiarity.

No one can pretend that the description in Hero's *Mechanica* of the cutter for a female-screw-thread is clear or easy to follow, but, at the least, it contains nothing that is mechanically impossible. The same, unfortunately, cannot be said of Mr Drachmann's commentary on it. This much is clear from Hero, that the boring bar, to which the cutting tool is attached, consists of a cylindrical piece of wood from which a segment has been sawn away longitudinally. The iron cutter projects from the flat surface which remains when the segment has been taken away, and a channel of lenticular section is left through which the shavings can clear away from the cutter along the boring

* They will. Editor.

bar. Without any authority from the text of Hero, Mr Drachmann says 'the sawn off part' [of the boring bar] is replaced . . .; it could not quite fill out its old place, since even the finest saw-cut has a definite thickness; but that would be of little moment, since the remaining part of the peg [*i.e.* the boring bar] would be enough to ensure a tight fit in the hole in which the screw thread is to be cut'. Now a tight fit is the last thing that is wanted, for it would infallibly prevent the cutter working at all, as any user of boring tools knows. Hero, being a competent engineer, said nothing about replacing the segment cut from the boring bar, because he knew very well that the action of his screw-cutter depended on good clearance of the cutting edge.

It is disappointing to find the old wrong-headed doubts about the date of Vitruvius repeated by so well-informed a writer as Mr Drachmann. Old errors, as he says himself, die hard indeed. Dietrich, Sontheimer, and Krohn have established plainly that the *de Architectura* was written between 40 B.C. and the battle of Actium, and the preface was added not much later than 28 B.C. 'But if we take it', says Mr Drachmann, 'that Vitruvius* is speaking of direct screw presses, then either Plinius is wrong, or Vitruvius's date is false'. There is no reason in fact why we should accept either of these alternatives, for Vitruvius may quite well be referring to screw and lever presses, in which case his evidence agrees with that of Pliny. E. J. André Kenny.

LES RELIGIONS ORIENTALES DANS LE PAGANISME ROMAINE (*Conférences faites au Collège de France en* 1905). *By* Franz Cumont, Membre de l'Institut. *Libraire orientale Paul Geuthner*, 13 *rue Jacob, Paris.* Quatrième édition, 1929. *pp.* xvi, 339, *with* 16 *plates*, 13 *figs.* 80 *francs.*

This book is based upon two series of lectures delivered by Professor Cumont, the one in November 1905 at the Collège de France under the 'fondation Michonis', the other, a little later, at Oxford, at the invitation of the Hibbert Trust. In his preface to the fourth edition, undertaken, we are told, at the request of an enterprising publisher, the author points out that his task has been far from easy, owing to the great number of discoveries made, and of learned articles written, during the period of nearly twenty years that has intervened since the publication of his second edition. Indeed, an attempt to discuss all the new hypotheses that have been put forward, and to record and explain all the new results that have been obtained, would have involved the expansion of a small book into a large volume. But this would have further involved a complete departure from the author's original purpose, which was not to write a series of erudite dissertations for specialists, but to bring out into clear relief, for the general run of cultivated readers, the essential ideas and distinctive characteristics of the various oriental mystery-cults and to indicate the contribution made by each to the whole complex of Graeco-Roman religious thought. Since, then, any considerable multiplication of details would only have served to obscure the main lines, the author has left his text substantially unchanged, contenting himself with the correction of a few material errors, the addition of a few characteristic facts and a rapid indication of new views. The largest and most important addition to the text is the appendix on the Mysteries of Bacchus in Rome, which owing to their semi-Oriental character ought not to be neglected. The notes, however, have been entirely rewritten and very considerably enlarged; and in them we find a chronicle of the principal new results arrived at by work published since 1909 and summaries of studies published by the author himself since that date.

* VI, vi, 3.

The detailed index and excellent illustrations are further additions which greatly enhance the value of the book.

Anyone who takes up the book will realize at once that the faith of Professor Cumont's publisher in the success of a fourth edition has been completely justified. It is just this firm determination on the author's part that his readers shall not fail to see the wood for the trees that gives his book a permanent and independent value which remains undiminished by the progress of modern research. Not only does he provide us with a framework into which we can fit our new and more detailed knowledge as we acquire it, but by insisting upon the great basic ideas and tendencies that underlie these Oriental creeds he enables us to view in the right perspective each new discovery as it comes in and to grasp at once its true significance. After two introductory chapters, one discussing the influence on Rome of the Hellenistic East and the sources of our information about the mystery-cults, the other suggesting various explanations of the spread of these cults in general through the Empire, Professor Cumont devotes a chapter to each of the four great Oriental religions that passed westwards into the Roman world from four great centres—Asia Minor, Egypt, Syria and Persia. The character of each religion is expounded with a fulness and completeness that should more than satisfy the general reader, and the descriptions are vivid and picturesque. But the specific importance and significance of each is constantly kept before our eyes. We see how the Anatolian cult of Cybele or the Magna Mater introduced into the Occident the ideas of fanatical religious devotion, of ' sacrament ', of moral and spiritual purification and of eternal life ; how the chief attraction of the Egyptian cult of Isis and Serapis lay in the splendour of its ceremonial and daily liturgy carried out by members of a sacerdotal caste whose lives were exclusively consecrated to the priestly calling ; how in Syria the primitive cults of local Baals were, largely under the influence of Chaldaean astrology, gradually transformed into the worship of a single deity of a very exalted type, transcendental, omnipotent, universal, eternal, a worship which appeared in Rome and Italy under the Severi in the form of the monotheistic cult of Sol Invictus ; how Persian Mithraism upheld a high standard of moral purity and a high ideal of brotherliness and charity, and inculcated, owing to its dualistic teaching, the conception of life as a perpetual battle between good and evil, between the powers of light and the powers of darkness, and of salvation or damnation in the world to come according to the side on which the soul was judged to have ranged itself in the course of its earthly warfare. Next there comes a chapter on astrology and magic. Astrology is shown to be an essentially ' scientific ' religion, based on observation and experience, claiming to foretell the fate of states and individuals with absolute sureness and exactitude, and teaching the idea of the world as a vast organism, the universal solidarity of the human race derived from its common parentage in the stars, the notion of a ' sympathy ' existing between mankind and nature on the one hand and the stars of heaven on the other, and the human soul's capacity for ' communion ' with the astral powers. Magic is the ' science ' by which man learns how to please and appease the divinities resident in constellations, planets and stars and how to release, for the service of his own will, the latent forces of the natural world. In a final chapter on the transformation of Roman paganism Professor Cumont gives an admirable summary of the synthesizing tendencies common to this great variety of creeds, showing that, through the moral and intellectual sphere in which they moved and the common goal, that of assuring eternal happiness to the individual soul, which they had in view, they transformed the whole aspect and orientation of Roman paganism, unconsciously drawing nearer and nearer to the Christianity that

first fought and finally vanquished them. ' L'esprit religieuse et mystique de l'Orient s'était peu à peu imposé à la société entière, et il avait préparé tous les peuples à se réunir dans le sein d'une église universelle ' (p. 194).

There are two points in the book which seem to call, not exactly for criticism, but for reconsideration on the part of the reader. On pp. 3 and 4 Professor Cumont lays emphasis upon the imitation of the East which is discernible in the political institutions of Imperial Rome. It must, of course, be admitted that Roman centralization and bureaucratic administration represent, to a very large extent, the matured product of experiments which the Hellenistic kingdoms had already ' tried out ', and that the court terminology, ceremonial and etiquette in use under the Oriental monarchies were gradually taken over by Rome in the course of that process which transformed the Augustan principate into the absolute monarchy of the third century A.D. But it must be remembered that the Roman genius alone evolved that institution of Imperial citizenship combined with local citizenship which was the fundamental basis and principle of the Empire's cohesion and solidarity, and which substituted for the political *organizations* constituted by the Graeco-Oriental kingdoms the living *organism* of the Imperium Romanum. Secondly, we miss in the book an attempt to explain, however briefly, the uncompromising warfare waged by the Christian Church upon the mystery-cults that seem to resemble it so closely, or to discover that vital something which the mysteries lacked and Christianity had, accounting for the ultimate failure of the one, and the success of the other, in winning the allegiance of mankind. This might have helped to throw into even clearer relief some of the features of the mysteries themselves.

J. M. C. TOYNBEE.

WANDMALEREIEN DER ATHOS-KLÖSTER. Grundsätzliches zu den Planungen der Bildfolgen des 14–17 Jahrhunderts. *By* FRITZ FICHTNER. *Berlin : Dietrich Reimer, Wilhelmstrasse* 29, 1931. *pp.* 64, *map*, 2 *plans and* 63 *plates in collotype.* 40 *Rm.*

Dr Fichtner's book is one for the general reader and student rather than for the narrow specialist. He presents in a convenient and accessible manner a summary of what is known of the wall-paintings of Mount Athos. After a short introduction describing the organization of the Holy Republic and its present-day status, he analyzes the character of the paintings. He notes that the work is not purely representational, not naturalistic in its aims, but seeks rather to convey a weighty message and a deep meaning by means of forceful, even harsh media. The paintings of Athos would thus, according to him, fall into that group of Byzantine art which is primarily inspired by the East, and which was in earlier days mainly associated with Syria and Cappadocia. Though this is true of the Athos paintings to a considerable degree, there is nevertheless to be traced as well a definite love not so much of the idealistic, as of the ethereal—the same spirit in fact that we see in some of the ivories or mosaics of the eleventh or twelfth centuries—and it is this spirit which serves to distinguish the paintings of Greece and Athos from those of Cappadocia as far as style is concerned, though iconography, technique and other matters probably played a more important part in the formation of the later ' schools '.

The second chapter is concerned with the liturgy and its demands on architecture, and on the arrangement of decoration in the church. The daily services are described—a long footnote (p. 18) deals with the development of the actual liturgy throughout the

ages—and the arrangement of the scenes on the church wall, originally set out in the painter's guide, is summarized. A most useful plan showing how the various scenes of the liturgy, the gospels or the apocrypha are arranged in the church is given on page 22.

In the third chapter the place of Athos in Byzantine art is considered and certain characteristics of this late period are tabulated. The fourth deals with matters of dating; an extremely useful table of the monuments and their dates is given on pp. 46 and 47. In the final chapter the characteristics of the two main schools of painting on Athos, the Macedonian and the Cretan, are summarized.

The book is illustrated with 63 really first-class plates, in which views, architecture and interior decoration play a part almost as important as that of the wall paintings.

D. Talbot Rice.

L'ART BYZANTIN. Tome I. *By* Hayford Peirce *and* Royall Tyler. *Paris: Librairie de France*, 1932. *pp.* 116 *and* 200 *plates in phototype.* 350 *francs.*

The first volume of this magnificent work deals with the period 298 to 518, when Byzantine art in the true sense of the word was in the process of formation. Many of the objects illustrated are, in fact, in no sense Byzantine; they are the Romanized descendants of Greek originals and they are to be counted among, but not as the only, forerunners of Byzantine products. To make the character of that art clear to the full, a number of plates illustrating works produced in Syria and Asia Minor during the Hellenistic period and in the more definitely eastern spheres of Mesopotamia and Persia would also be desirable, for these eastern elements were in some cases even more important than the Roman in the formation of what may be termed pure Byzantine.

The collection of plates as it stands is, nevertheless, of the very greatest interest. The authors set out to show the importance of Byzantine art and to tell its story by means of reproductions; each plate is described and discussed at some length. Yet the work is not a corpus, for the numerous kindred objects that exist are not listed. The descriptions are excellent and the system on which they are done is described in a preface (pp. 11–14). A chronological table enables the reader to make full use of these descriptions and a map of the Roman Empire at the end of the 4th century is an essential which is all too often omitted in art books of this type.

Another short preface (pp. 9–11) deals with the character of Byzantine art. It is concise and to the point, yet certain statements seem, to say the least, questionable. Thus on p. 10 the authors remark 'at its decline and then only did the art of the Eastern Empire become exclusively religious in character'. On page 11 they conclude the introduction with the words, 'one will not be far from the truth in saying that the religious sentiment was not supreme when the art was in its infancy, that this spirit was powerless to arrest its decline and that it remained foreign to a good many of its most successful achievements'. That some great secular monuments were produced by Byzantine art is a fact which cannot be disputed, but the religious character of Byzantine art in general seems to the reviewer something which is absolutely essential to it. Had it not been for Christianity, it is highly probable that that fusion between East and West which formed the basis for Byzantine art would never have taken place, nor would the subtle character which distinguished the Byzantine ever have been evolved. The very fact that Justinian expended all his resources on the building of the greatest cathedral of the world, while

the royal palace remained a conglomeration of small buildings, is a striking proof that religion was above anything else an essential of the age, of its culture and of its art.

The remark that Byzantine art reached its close when the artists became content with mere illustration is true enough. Yet it is hardly just to say that this decline is characteristic of the thirteenth century in general. The researches of such a savant as Millet have amply proved the importance of this late period and we are just coming to realize that some at least of the icons and wall paintings of the 13th, 14th, 15th and even the 16th centuries have a definite importance as works of art.

The descriptions of the individual plates are preceded by a general outline of the period covered in the first volume, comprising, (1) the beginnings and the Tetrarchic style, (2) Constantinian art, (3) the end of the 4th century, (4) the 5th century. This tells the reader what to expect. To follow the development of the art during this period he must turn to the 200 plates.

The work is excellently produced and it is to be commended to the general reader as well as to the specialist. It is to be completed in five volumes. We look forward to the appearance of the others which will deal with the ages which must, for us, be regarded as truly Byzantine, rather than with the early period of preparation and formation.

D. Talbot Rice.

THE ANIMAL STYLE IN RUSSIA AND CHINA. *By* M. Rostovtzeff. *Princeton University Press*, 1929. *pp.* xvi, 111, *and* 32 *plates*. 52*s* 6*d*.

Professor Rostovtzeff has made a valiant attempt to ascertain the origins of the animal style in art in non-Chinese Asia on the one hand and in China on the other. His splendid series of plates will in any case serve as a valuable corpus for all others who may venture into this indeterminate *terra incognita*. But in regard to the Chinese side of the problem the author is frank. ' The great difficulty ', he points out, ' consists in the almost complete lack of scientific evidence for dating Chinese bronzes and jades '. This difficulty is intensified by the fact, as the author puts it, that ' it is not easy to deal with the Chinese animal style for one who does not know the Chinese language, who has never been to China, and who knows Chinese art therefore not in its natural surroundings but from articles scattered in American and European museums '. I cannot envy the author his task and feel tempted to suggest that no further progress can be made with the problem at all until really scientific excavations in China, Siberia, Turkestan and Tibet have provided specific starting points for an enquiry. As things are at present, Chinese art has to be classified almost entirely upon a morphological basis, which, as is well enough known, is invariably beset with deep and dangerous pitfalls. Strictly speaking there is no such thing as an archaeology of China as yet. The tentative conclusions reached in this short but well documented book may therefore be reversed by any established scientific discovery. Indeed the author has already discarded the main conclusion reached in his book ' Iranians and Greeks ' that Chinese and Scythian animal styles were derived from a common origin.

The first 61 pages of the text are devoted to the Scythian and Sarmatian material, with some additions to that already published in earlier books. In the remaining 50 pages the Chinese side is discussed. The main conclusion is that the Yue-Chi, who perhaps started life in Tibet, were the carriers, or even the inventors of the animal style. The Huns in turn took it either from them or from a common source. But all this is *obscurum per obscurius* until the elements of Tibetan archaeology are known.

In conclusion the author disclaims any intention to follow the spread of the animal style into northern Europe and he asks the question whether the animal style influenced Byzantine and early Russian art. On one part of this latter problem the present reviewer feels few doubts. Byzantine art had its animals, like most arts at all ages, but they bear little relation to the Central Asiatic animal style. Beyond certain qualities they have in common with Persian and Sassanian art (which involves of course an indirect connexion with Asia) almost all of them are semi-Hellenistic and fully adapted by Byzantine art into its own mode of thought and expression. This line of enquiry at least will prove a *cul-de-sac*.

S. CASSON.

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This is a model epigraphical publication. Despite difficulties presented to the author by the lack of early excavation records, a complete collection of every inscribed Roman fragment found at Corinth during thirty years' excavation is here available. Needless to say a compilation of this kind does more to illustrate the life of Corinth during the Roman period than any study of historical texts, for it gives the details of the minor official activities of the people and affords a prosopography which is bound to be useful for research students in the future. But the results are not exciting. There are no inscriptions of vital historical importance. The earliest of all records in verse the transport across the Isthmus of a Roman fleet, written by a poet who served under Marc Antony's grandfather, and was naively or deliberately ignorant of the fact that the Isthmus had previously been so crossed on more than one occasion. Another inscription mentions the family of Herodes Atticus, showing that the family had Corinthian connexions before the time of Herodes himself. Otherwise the collection consists of the usual type of epigraphical material.

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Of the two sculptures one is a well-preserved archaistic figure of Athena, clearly modelled on a sixth century *kore* type. The authors attempt to date it on technical grounds, pointing out that the absence of the use of a drill must conclusively assign it to a period of Roman carving when the drill had fallen out of use and popularity. On this assumption they date it to the early third century A.D. But their assumption cannot for a moment bear scrutiny. A sculptor who was deliberately following the mode of the sixth century B.C. would, if he were conscientious, have followed the

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Of the two sculptures one is a well-preserved archaistic figure of Athena, clearly modelled on a sixth century *kore* type. The authors attempt to date it on technical grounds, pointing out that the absence of the use of a drill must conclusively assign it to a period of Roman carving when the drill had fallen out of use and popularity. On this assumption they date it to the early third century A.D. But their assumption cannot for a moment bear scrutiny. A sculptor who was deliberately following the mode of the sixth century B.C. would, if he were conscientious, have followed the

technique as well as the style of his prototype. In this case that is exactly what he has done, and the period which he followed was one, in the mid-sixth century, when sculptors did not use the drill at all. This is evident from the way in which the folds of drapery are rendered : they correspond exactly with the folds of a certain group of Attic *korai* in which flat and undrilled drapery is universal. It becomes, therefore, not only hazardous but actually impossible to use technical arguments in the case of archaistic sculpture. For you never know for certain whether the artist is following the technique of his day or of his prototype.

The other sculpture is a large part of a superb figure in armour. The skill and beauty of the detailed ornament place it in the forefront of Roman work. It is a most welcome addition to our knowledge of Roman carving. S. CASSON.

JAINISM IN NORTHERN INDIA, 800 B.C.–A.D. 526. *By* CHIMANLAL J. SHAH. *Longmans*, 1932. *pp.* XXIV, 292 *and* 26 *plates*, 2 *maps*. 42*s*.

Jainism as we know it took shape not only at the same time but in the same environment as Buddhism. So far, however, from the records of one religion confirming or supplementing those of the other, we find as between these two sets of records a discrepancy which throws a disquieting light on much that has passed as historical fact. The monarchs whom we have accepted as ardent supporters of Buddha and his doctrine re-appear in Jain literature as enthusiastic patrons of his rival Mahavira. It has even been suggested recently that Buddha and Mahavira were the same person. It is certain at any rate that there has been contamination between their legends. Buddha's death is closely connected with a place called Pava and a blacksmith called Cunda. Mahavira dies at Pava, and Cunda brings the story of his death to Buddha.

The author is chiefly concerned in this scholarly book with the outward history of Jainism, rather than with its tenets. To the outside world the most striking feature of the religion was its cult of nakedness, which horrified certain other sects, notably the Buddhists. Beyond telling us that the stricter Jains held ' absolute nudity to be a necessary condition of saintship ' the author does not attempt to explain the connexion between this practice and Jain philosophy. It had the unhappy result of entirely excluding women from the higher walks of orthodox saintship, for it was not contemplated as possible that women should conform to such a prescription. ARTHUR WALEY.

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